

(19)



Europäisches Patentamt
European Patent Office
Office européen des brevets



(11)

EP 1 206 088 A2

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
15.05.2002 Bulletin 2002/20

(51) Int Cl.7: H04L 12/58, H04L 12/24

(21) Application number: 01124376.3

(22) Date of filing: 24.10.2001

(84) Designated Contracting States:
AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU
MC NL PT SE TR

Designated Extension States:
AL LT LV MK RO SI

(30) Priority: 24.10.2000 JP 2000324324
27.10.2000 JP 2000328810

(71) Applicant: Ricoh Company, Ltd.
Tokyo 143-8555 (JP)

(72) Inventors:

- Miida, Tetsuya
Nerima-ku, Tokyo 176-0014 (JP)
- Katagiri, Yayoi
Kawagoe-shi, Saitama 350-0035 (JP)
- Nishida, Hiroshi
Yokohama-shi, Kanagawa 247-0014 (JP)

- Nishiura, Takehiro
Machida-shi, Tokyo 194-0004 (JP)
- Shinohara, Eiji
Asao-ku, Kawasaki-shi, Kanagawa 215-0032 (JP)
- Torikai, Tatsuto
Yokohama-shi, Kanagawa 241-0812 (JP)
- Hosoda, Hiroshi
Izumi-ku, Yokohama-shi
Kanagawa 245-0003 (JP)
- Kataoka, Keisuke, Hilltop Nagatsuda 303
Yokohama-shi, Kanagawa 226-0026 (JP)
- Misumi, Sachiko, Residence Denen 3A
Tokyo 158-0084 (JP)
- Hanai, Atsushi
Kawasaki-shi, Kanagawa 215-0001 (JP)

(74) Representative: Schwabe - Sandmair - Marx
Stuntzstrasse 16
81677 München (DE)

(54) **System, method, apparatus and computer program product for collecting and providing information**

(57) A transmission device (400) sends status information representing status of a copier (300) to a center (100) through a PSTN (2). In the center (100), the status information of each copier (300) is analyzed, and suggestion information selected based on a result of the analysis is provided to a terminal (500) of the user of the copier (300) concerned. In this case, the user is informed by an e-mail or through a Web page with using the terminal (500). The information includes: a suggestion to multiply the copier (300), replace the currently-used copier (300) with a new copier; performance information regarding a model of the currently-used copier (300); information regarding a timing for replenishing/replacing an consumable (such as a toner unit, etc.), and a suggestion to purchase the consumable.

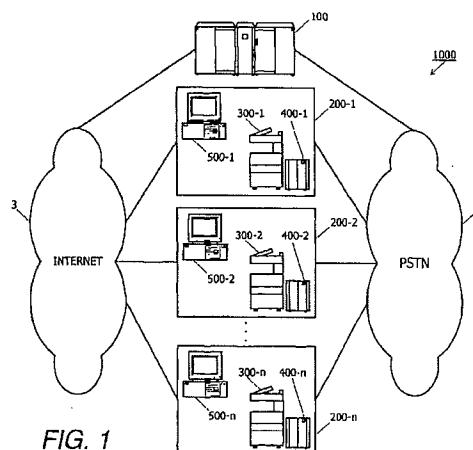


FIG. 1

Description

[0001] The present invention relates to a system, method, apparatus and computer program product for collecting and providing information, and, more particularly, to a system, method, apparatus and computer program product for collecting status information of products and providing suggestion information in accordance with the status information.

[0002] Conventionally, there has been a system which is practically used for collecting information representing status of an image data processor such as a copier through a communications network such as a PSTN (Public Switched Telephone Network) etc. In such a system, a center collects information representing the number of documents to be copied and number of papers used for copying the documents, customer by customer. The collected information is usually used for calculating charges for maintenance services for the copiers.

[0003] A technique to which the above system is applied, is disclosed in Unexamined Japanese Patent Application KOKAI Publication No. 2000-49998. According to the technique, the image formation device obtains information regarding to optional functions from a center, thus, a user can tries out the optional function or updates the software before using the optional function.

[0004] In the above technique, the center provides the user with the information regarding the optional function only when the user requests it. Therefore, it is not suitable for voluntary presentation of suggestion given by the manufacturer or vendor. Further, the technique is applicable to the case where to update the currently-used image formation device without replacing it with another device.

[0005] The present invention has been made in consideration of the above. It is accordingly an object of the present invention to provide a system, method, apparatus and computer program product for collecting and providing information, and for effectively providing customers with suggestion information with ease.

[0006] Another object thereof is to provide a system, method, apparatus and computer program product for collecting and providing information so as to easily provide users with adequate consumable, and for securely informing the users about an adequate timing for replacing a currently-used consumable with a new consumable based on collected status information.

[0007] To achieve the above objects, an information collecting/providing system is characterized by comprising a center (100), a transmitter (400), and a customer terminal (500) which are connected with each other through a communications network (2, 3), and

wherein the transmission device (400) sends status information sets representing status of products used by customers, and

the center (100) includes

a customer-information storage unit (22) which stores customer information,

a suggestion-information storage unit (24) which stores suggestion information sets representing suggestions relating to the products,

a status-information collector (110, 12) which collects and stores the status information sets transmitted by the transmitter (400),

a suggestion-information selector (20) which selects suggestion information sets stored in the suggestion-information storage unit (24), based on the status information sets collected by the status-information storage collector (110); and

a suggestion-information providing unit (20) which provides the customer terminal (500) of a customer corresponding to the status information set with the suggestion information selected by the suggestion-information selector (20).

[0008] According to the above structure, the center of a company manufacturing and/or vending the product collects information representing the status of the product used by the customer, and sends information representing recommendation matters based on the status to a user terminal such as a personal computer, used by the customer. Thus, the company (manufacturer and/or vendor) can effectively provide the customer with various recommendation matters. At the same time, the customer easily obtains the useful information.

[0009] In the above information collecting/providing system,

the center (100) may further includes:

35 a request receiver (10) which receives a request signal from the customer terminal (500); and

40 a customer authenticator (20) which identifies a customer having sent the request signal received by the request receiver (20), based on the customer information stored in the customer-information storage unit (22), wherein,

45 the suggestion-information selector (20) may select suggestion information, based on the status information corresponding to the customer identified by the customer authenticator (20).

[0010] According to this structure, the center may establish a Web site. When the customer accesses the Web site, the center can automatically provide the customer with recommendation information based on the status of the product used by the customer, through the Web site.

[0011] The above information collecting/providing system may further comprise a status analyzer which analyzes the status information, wherein,

the suggestion-information selector (20) may select the suggestion information based on a result of analysis done by the status analyzer (20). According to this structure, recommendation information can be provided to the customer in accordance with the status of the product used by the customer.

[0012] In the above information collecting/providing system,

the status information may represent the usage frequency of each function of the product; and the suggestion-information selector (20) may refer to the status information to find out frequently used functions, and select a suggestion information set, in consideration of the function concerned.

[0013] In this case, the suggestion-information selector (20) may select the suggestion information set suggesting a product which is advanced in the functions concerned.

[0014] According to the above structure, of functions in the product used by the customer, the center analyzes which function is the frequently used function. And, the center provides the customer with information suggesting another product which is advanced in that function rather than the product being used by the customer.

[0015] In the information collecting/providing system,

the status information may represent the usage frequency of each function of the product; and the suggestion-information selector (20) may refer to the status information to find out rarely-used functions, and select the suggestion information set in consideration of the function concerned.

[0016] In this case, the suggestion-information selector (20) may select a suggestion information set representing how to use the function concerned.

[0017] According to this structure, the center analyzes which function is the rarely used function. And, the customer is provided with information representing how to use that function, in order to promote the usage of the function for more convenience, efficiency, and the like.

[0018] In the information collecting/providing system,

the status information may represent consumption of consumables in the products,
the system may further include a consumption analyzer which analyzes the consumption of the consumables which is shown in the status information, and
the suggestion-information selector (20) may select the suggestion information sets, based on a result of analysis done by the consumption analyzer.

[0019] According to this structure, in the case where the product includes expendable units, the center ana-

lyzes consumption of those expendable units. And, the center provides the customer with the information representing that the expendable unit should be recharged or replaced with a new one.

[0020] To achieve the above objects, an information collecting/providing system according to a third aspect of the present invention comprises:

an information collector (110) which collects status information representing consumption of consumables for use in an image data processor (300) through a first communications network (2);

a consumption analyzer (20) which analyzes the consumption of the consumables shown in the status information collected by the information collector, and determines whether the consumable should be changed or replaced with a new consumable; and

a consumption indicator (120), being connected to terminals used by the users of the image data processors through a second communications network (3), which indicates on the terminal that there is the expendable which should be changed or replaced based on the determination made by the consumption analyzer (20).

[0021] In this case, the consumption indicator (120) may send information representing that the consumable should be changed or replaced with a new consumable to the terminal (500).

[0022] According to this structure, information representing the consumption of the expendable unit (such as a toner unit, sheets, or the like in the image data processor such as a copier) can be collected using a communications network, for example, PSTN. The collected information is analyzed. In the case where the analysis result indicates that the expendable unit should be recharged or replaced with a new one, information representing the analysis result is transmitted to a user terminal such as a personal computer, cellular phone, and mobile communications terminal used by the user of the image data processor. The information may be transferred through a communications network such as the Internet in the form of an e-mail or a Web page. Therefore, the user is able to know an adequate timing for recharging or replacing the expendable unit.

[0023] In the information collecting/providing system, the consumption indicator (120) may send the terminal (500) with information representing an order form for purchasing a new consumable with indicating that the consumable should be replaced with a new consumable.

[0024] According to this structure, when the customer is informed that the expendable unit should be recharged or replaced by e-mail or the Web page, information on the e-mail or Web page is linked to a Web page providing an order form for purchasing the expendable unit. This enables the user to easily purchase the

expendable at an adequate timing. In this case, the manufacturer and/or vendor can promote usage of genuine expandable units to the customers.

[0025] To achieve the above objects a method for collecting/providing information according to a fourth aspect of the present invention comprises:

collecting status information representing status of a product possessed by a customer;
storing suggestion information representing a suggestion in accordance with the status of the product;
selecting the suggestion information stored at the suggestion information storing step, based on the status information collected at the information collecting step; and
providing the customer with the suggestion information selected at the suggestion information selecting step.

[0026] To achieve the above objects, a method for collecting/providing information according to a fifth aspect of the present invention comprises:

storing customer information;
collecting status information representing status of products used by customers registered in the customer information stored at the customer information storing step, through a communications network (2);
storing the suggestion information representing a suggestion to be given to the customer;
selecting the suggestion information stored at the suggestion information storing step, based on the status information collected at the information collecting step; and
providing the customer with the suggestion information selected at the suggestion-information selecting step, through a communications network.

[0027] The method may further comprise:

receiving a request signal for requesting suggestion information, from a customer terminal of the customer; and
specifying a customer having sent the request signal received in the request-information receiving step, based on the customer information stored the customer-information storing step, and
wherein the suggestion-information selecting step may select suggestion information, based on status information of the produced used by the customer specified in the customer specifying step.

[0028] The method may further comprise analyzing the status information, wherein,

the suggestion-information selecting step may select the suggestion information based on a result of

analysis done at the status information analyzing step.

[0029] In the above method, the status information may represent the usage frequency of each function of the product, and

the suggestion-information selecting step may refer to the status information to find out frequently-used functions, and select the suggestion information in consideration of the functions concerned.

[0030] In the above method, the suggestion-information selecting step may select the suggestion information representing a product which is advanced in the functions concerned.

[0031] In the above method, the status information may represent the usage frequency of each function of the product, and

the suggestion-information selecting step may refer to the status information to find out rarely-used functions, and select the suggestion information in consideration of the functions concerned.

[0032] In the above method, the suggestion-information selecting step may select the status information representing how to use the functions concerned.

[0033] In the above method,
the status information may represent consumption of consumables in the products,
the method may further comprise a consumption analyzing step of analyzing the consumption of the consumables shown in the status information, and
the suggestion-information selecting step may select the suggestion information based on a result of the analysis of the consumption analyzing step.

[0034] To achieve the above objects, an apparatus for collecting/providing information according to a sixth aspect of the present invention comprises:

a connector which connects the apparatus to a communications network (11, 21);
a customer-information storage unit (22) which stores customer information including information regarding customers and information representing products used by the customers, in association with each other;
a suggestion-information storage unit (24) which stores suggestion information sets each representing a suggestion to be given to the customers;
a receiver (10) which controls the connector (11) to receive status information representing status of the product used by the customer shown in the customer information stored in the customer-information storage unit;

a status-information storage unit (12) which stores the status information received by the receiver (10); a request receiver (20) which controls the connector (21) to receive a request signal for requesting the suggestion information, from a customer terminal (500);
 a customer-authentication unit (20) which specifies a customer having sent the request signal received by the request receiver, based on the customer information stored in the customer-information storage unit (22);
 a status analyzer (20) which retrieves status information of the product used by the customer specified by the customer-authentication unit (20) from the status-information storage unit (12), and analyzes the retrieved status information;
 a suggestion-information selector (20) which selects the suggestion information sets from the suggestion-information storage unit (24), based on a result of the analysis done by the status analyzer (20); and
 a suggestion-information transmitter (20) which controls the connector (21) to transmit the suggestion information sets selected by the suggestion-information selector (20) to the customer terminal (500).

[0035] In the above apparatus,

the status information may represent the usage frequency of each function of the product;
 the status analyzer (20) may analyze status of frequently-used functions, and
 the suggestion-information selector (20) may select suggestion information representing a product which is advanced in the functions concerned, from the suggestion-information selector (20).

[0036] In the above apparatus,

the status information may represent the usage frequency of each function of the product,
 the status analyzer (20) may analyze status of rarely-used functions, and
 the suggestion-information selector (20) may select the suggestion information set representing how to use the functions concerned, from the suggestion-information storage unit (24).

[0037] In the above apparatus,

the product may be an image data processor (300), and
 the apparatus may further include a product-information storage unit (26) which stores product information including information representing a performance level of the image data processor (300), wherein,

5 the status information may represent an amount of processing done by the image data processor (300),
 the status analyzer (20) may analyze whether the amount of processing is tolerable for the image data processor (300) based on the performance level of the image data processor, and
 the suggestion-information selector (20) may select the suggestion information set which suggests that the image data processor (300) should be multiplied, in a case where the status analyzer indicates that the amount of processing is intolerable for the image data processor (300).

10 [0038] In the above apparatus,

the suggestion-information selector (20) may select the suggestion information set for suggesting that another image data processor corresponding to the amount of processing should be purchased, in a case where the status analyzer indicates that the amount of processing is intolerable for the image data processor (300).

15 [0039] In the above apparatus,

the status information may represent consumption of consumables in the image data processor (300), the status analyzer (20) may analyze the status information to determine whether the expendable should be replaced with a new expendable, based on the consumption of the consumables shown in the status information, and
 the suggestion-information selector (20) may select the suggestion information indicating that there is the consumable which should be replaced, and another suggestion information representing an order form for purchasing a new expendable unit.

20 [0040] In the above apparatus,

the status information may represent consumption of consumables in the image data processor, and the status analyzer may analyze the status information to determine whether the consumable should be replaced with a new consumable, wherein, the apparatus may further include an ordering unit (20) which controls the connector (21) to transmit order information to a vendor of the consumable, in a case where the result of analysis done by the status analyzer indicates that the consumable should be replaced with a new consumable.

25 [0041] To achieve the above objects, a computer program product according to a seventh aspect of the present invention causes a computer to function as the above apparatus.

[0042] These objects and other objects and advan-

tages of the present invention will become more apparent upon reading of the following detailed description and the accompanying drawings in which:

- FIG. 1 is a diagram showing the structure of an information collecting/providing system according to the first and second embodiments of the present invention; 5
 FIG. 2 is a block diagram schematically showing the structure of a center shown in FIG. 1; 10
 FIG. 3 is a diagram showing an example of status information stored in a customer-information database shown in FIG. 2; 15
 FIG. 4 is a diagram showing an example of information stored in a customer-ID database shown in FIG. 2; 20
 FIG. 5 is a diagram showing an example of information stored in a product-information database shown in FIG. 2; 25
 FIG. 6 is a block diagram schematically showing the structure of a copier and a transmission device shown in FIG. 1;
 FIG. 7 is a flowchart for explaining the information collecting process carried out by the system according to the first embodiment of the present invention; 30
 FIG. 8 is a flowchart for explaining the information providing process carried out by the system according to the first embodiment;
 FIG. 9 is a diagram showing an example of a login page transmitted in the information providing process of FIG. 8;
 FIG. 10A is a flowchart for explaining an example of the process for analyzing the status information shown in FIG. 8, and FIG. 10B is a diagram showing an example of a table to be referred in the process for analyzing the status information shown in FIG. 10A; 35
 FIG. 11A is a flowchart for explaining another example of the process for analyzing the status information shown in FIG. 8, and FIG. 11B is a diagram showing an example of a histogram to be referred in the process for analyzing the status information shown in FIG. 11A;
 FIG. 12A is a flowchart for explaining still another example of the process for analyzing the status information shown in FIG. 8, and FIG. 12B is a diagram showing an example of a histogram to be referred in the process of FIG. 12A; 40
 FIG. 13 is a flowchart for explaining still yet another example of the process for analyzing the status information shown in FIG. 8;
 FIG. 14 is a flowchart for explaining further example of the process for analyzing the status information shown in FIG. 8; 45
 FIG. 15 is a diagram for explaining a personalized information area prepared in a Web page to be transmitted in the process for analyzing the status information shown in FIG. 8; 50
 FIG. 16 is a diagram showing an example of a Web page to be transmitted in the process for analyzing the status information shown in FIG. 8; 55
 FIG. 17 is a diagram showing another example of a Web page to be transmitted in the process for analyzing the status information shown in FIG. 8;
 FIG. 18 is a flowchart for explaining an information collecting process which is carried out by the information collecting/providing system according to the second embodiment of the present invention;
 FIG. 19 is a flowchart for explaining the process for providing information by e-mail according to the second embodiment of the present invention;
 FIG. 20 is a diagram showing an example of the e-mail to be transmitted in the information providing process shown in FIG. 19;
 FIG. 21 is a diagram showing another example of e-mail to be transmitted in the information providing process shown in FIG. 19;
 FIG. 22 is a flowchart for explaining the process for providing information through the Web page according to the second embodiment of the present invention;
 FIG. 23 is a diagram showing an example of the Web page to be provided in the information providing process shown in FIG. 22;
 FIG. 24 is a diagram showing another example of the Web page to be provided in the information providing process shown in FIG. 22;
 FIG. 25 is a diagram showing the structure of an information collecting/providing system according to the third embodiment of the present invention;
 FIG. 26 is a block diagram schematically showing the structure of a center shown in FIG. 25;
 FIG. 27 is a flowchart for explaining an information providing process carried out by the system shown in FIG. 25;
 FIG. 28 is a diagram showing an example of the Web page to be provided in the information providing process shown in FIG. 27;
 FIG. 29 is a diagram showing an example of e-mail to be transmitted in the information providing process shown in FIG. 27;
 FIG. 30 is a flowchart for explaining the order accept process carried out by the system shown FIG. 25; and
 FIG. 31 is a flowchart for explaining quick delivery service carried out by the system according to the fourth embodiment of the present invention.

[0043] Preferred embodiments of the present invention will now be described with reference to the accompanying drawings.

[0044] FIG. 1 is a diagram schematically showing the structure of an information collecting/providing system according to the first embodiment of the present invention. In this embodiment, a copier is the example of product concerned, and explanations will now be made to

the case where information is collected from the copiers installed in companies.

[0045] As illustrated in FIG. 1, an information collecting/providing system 1000 of this embodiment comprises a PSTN (Public Switched Telephone Network) 2, a communications network 3, a center 100, a plurality of copiers 300-1 to 300-n installed in a plurality of companies 200-1 to 200-n respectively, a plurality of transmission devices 400-1 to 400-n attached respectively to the plurality of copiers 300-1 to 300-n, and a plurality of terminals 500-1 to 500-n.

[0046] The PSTN 2 is an ordinary telephone line network, and transfers information sent from each of the transmission devices 400-1 to 400-n.

[0047] The communications network 3 intermediates the information transfer between the center 100 and the terminals 500-1 to 500-n. In this embodiment, the communications network 3 may be the Internet, and herein-after referred to as the Internet 3. The Internet 3 is accessible via one or more than one of a leased line, PSTN, CATV (cable television, community antenna TV) network, mobile communications network, and various wire/wireless communications network, etc.

[0048] The center 100 includes a server managed by an organization (company) manufacturing and/or vending the copiers 300. The center 100 collects information from the transmission devices 400-1 to 400n through the PSTN 2, and provides the terminals 500-1 to 500-n with various information through the Internet 3.

[0049] The structure of the center 100 will now be explained with reference to FIG. 2. FIG. 2 is a block diagram schematically showing the structure of the center 100.

[0050] The center 100 is divided into two major components, an information collector 110 and an information provider 120.

[0051] The information collector 110 comprises an control unit (collector) 10, a CCU (Communication Control Unit) 11, and a customer-information database 12.

[0052] The control unit 10 may be a CPU (Central Processing Unit) or the like which controls components in the information collector 110, and executes operational programs stored in a predetermined storage unit, such as a memory, etc., thereby to carry out an information collecting process, as will be explained later.

[0053] The CCU 11 is a communications device, such as a modem, TA (Terminal Adapter), etc. The CCU 11 connects the information collector 110 to the PSTN 2, and receives information representing status of the copiers 300, as shown in FIG. 3, from the transmission devices 400.

[0054] As shown in FIG. 3, information representing the status of the copiers 300 includes the number of read papers and the number of copied papers, while specification information includes the numbers of used papers by each paper size (Japanese standard paper size) and the percentages of executed optional operations, within a predetermined period.

[0055] The customer-information database 12 may be a rewritable memory unit such as a hard disk drive, and which stores the information representing the status of the copiers 300 received by the CCU 11. The status information is recorded customer by customer.

[0056] The information provider 120 comprises an control unit (provider) 20, a CCU (Communication Control Unit) 21, a customer-ID (identification information) database 22, a suggestion-information database 24, a product-information database 26, and an input unit 27.

[0057] The control unit 20 may be a CPU or the like. The control unit 20 controls components in the information provider 120, and executes operational programs stored in a predetermined storage section such as a memory, so as to realize a process for providing information, as will be explained later.

[0058] In more particular, the CPU executes, as one of the operational programs, a program for realizing an operational mechanism such as CGI (Common Gateway Interface), and hence dynamically generating web page data to be provided to the terminals 500 through the Internet 3. Such the program will be referred to as "CGI program". Further, the CPU executes a predetermined program for controlling the information provider 120 to serve as an e-mail server.

[0059] The CCU 21 is a communications device, such as a router, etc., which connects the information provider 120 to the Internet 3, and sends the web page data generated by the control unit 20 to the terminals 500.

[0060] The customer-ID database 22 may be a rewritable memory unit such as a hard disk drive, to which identification (ID) information for identifying customers is registered. In this embodiment, such ID information are given to predetermined individuals who belong to their corresponding one of the companies 200.

[0061] An example of the information registered in the customer-ID database 22 is shown in FIG. 4. As shown in FIG. 4, the customer-ID database 22 includes information representing "Company ID" for specifying one corresponding company of the companies 200, "Model ID" which is unique number for specifying the copier 300, "Section Name" of a section in the corresponding company where the copier 300 is installed, "E-mail Address" and "Password" of a predetermined individual in the section, and "User Attribute" representing an attribute of each user.

[0062] The suggestion-information database 24 may be a rewritable memory unit such as a hard disk drive, or the like. The suggestion-information database 24 stores suggestion files each representing predetermined suggestion comments in a fixed form.

[0063] The product-information database 26 may be a rewritable memory unit such as a hard disk drive. The product-information database 26 stores performance information sets as shown in FIG. 5. The information sets are prepared for various models of copiers dealt by the manufacturer and/or vendor which managing the center 100. The product-information database 26 also stores

performance information of optional functions or peripheral devices prepared for each model.

[0064] The input unit 27 includes a keyboard, mouse, and the like. The input unit 27 is mainly used for editing (adding, updating, or deleting) information stored in the customer-ID database 22, suggestion-information database 24 and product-information database 26. For example, the input unit 27 is used when to add information regarding a newly-registered customer into the customer-ID database 22, and when to add product (item) information regarding a new product and its corresponding suggestion information in the product-information database 26 or suggestion-information database 24.

[0065] Each of the terminals 500 may be an information processor such as a personal computer, etc. Each of the terminals 500 includes at least a controller, a storage unit, a display unit, and a communications unit. According to the communications unit, the terminal 500 is able to access the center 100 through the Internet 3. Installed in the storage section of each terminal 500 are a mailer program for sending/receiving e-mails through the Internet 3, and a browser program for interpreting the web page data sent through the Internet 3 and displaying web pages on the display unit. The controller of the terminal 500 executes the programs so as to receive e-mails and web page data from the center 100. In this embodiment, each of the terminals 500 is installed in each company 200, and used by the individuals registered in the customer-ID database 22.

[0066] The structures of the copier 300 and of the transmission device 400 which are installed in each company 200 will now be described with reference to FIG. 6. FIG. 6 is a block diagram schematically showing the structures of the copier 300 and of the transmission device 400 according to the information collecting/providing system 1000 of the first embodiment.

[0067] The copier 300 comprises a control unit 30, various sensors 31, an error detector 32, and mechanical components 33.

[0068] The control unit 30 may be a CPU or the like, and controls components in the copier 300. The control unit 30 transmits, to the transmission devices 40, numeric data based on detection by the various sensors 31 and error detector 32, and information representing the status of the mechanical units 33 (hereinafter referred to as "status information").

[0069] The various sensors 31 detect the number of originals, the number of output sheets, the usage rates of paper cassettes each containing sheets, and the usage rate of toner, etc.

[0070] The error detector 32 detects any operational errors or troubles in the copier 300, for example, misfeeding or the like.

[0071] The mechanical units 33 include image forming mechanisms in the copier 300. Those are operated under control of the control unit 30 in accordance with an operational mode designated by a user.

[0072] The transmission device 400 comprises a con-

trol unit 40, a receiver 41, a storage unit 42, and a transmitter 43, as illustrated in FIG. 6.

[0073] The control unit 40 may be a CPU or the like, and controls components in the transmission device 400.

[0074] The receiver 41 receives status information sent from the control unit 30 of the copier 300.

[0075] The storage unit 42 may be a rewritable memory unit such as a hard disk drive, and stores the status information of the copier 300 which is received by the receiver 41 for a predetermined period of time.

[0076] The transmitter 43 connects the transmission device 400 to the PSTN 2, and sends the status information stored in the storage unit 42 to the center 100.

[0077] For the sake of comprehensive explanation, this embodiment exemplifies a case where one copier 300 is installed in the company while being connected to a single transmission device 400 by way of example. However, various configurations may be applicable. For example, a plurality of copiers 300 may be installed in the company 200 (or on the same floor of the company 200), or a plurality of copiers 300 may be connected to a single transmission device 400. This embodiment also exemplifies a case where the copier 300 and the transmission device 400 are separated. However, the copier 300 may include functions of the transmission device 400.

[0078] Processes carried out by the information collecting/providing system 1000 according to this embodiment will now be explained with reference to FIG. 7.

[0079] The control unit 30 of each copier 300 sends any signals detected in each operation by the various sensors 31 and/or error detector 32 and information representing operations of the mechanical units 33 (those signals and information will referred to as "status information"), to the transmission device 400.

[0080] The control unit 40 of the transmission device 400 controls the storage unit 42 to store the status information of the copier 300 received by the receiver 41 (Step S101).

[0081] The control unit 40 controls the transmitter 43, and sends the status information stored in the storage unit 42 to the center 100 through the PSTN 2 at a predetermined interval (Step S102: YES, S103).

[0082] In the center 100, the CCU 11 of the information collector 110 receives the status information sent from the transmitter 43 of the transmission device 400, and stores the received information in the customer-information database 12 (Steps S104, S105). At this time, the received information is stored in the customer-information database 12 and classified customer by customer, and the process is terminated.

[0083] The information providing process which is carried out by the center 100 according to this embodiment will now be explained with reference to the flowchart shown in FIG. 8.

[0084] In this embodiment, the company (manufacturer and/or vendor of the copier 300) establishes a Web

site on the Internet 3 for providing information regarding the company. This Web site is created and provided by the information provider 120 of the center 100. Most of the pages in the Web site are accessible by anybody via the Internet 3, but there are pages which limit the users to registered customers of the copier 300 (hereinafter referred to as "customer page").

[0085] A top page (homepage) of the Web site may include text or an image linked to the customer page. It is determined whether a request for accessing the customer page is given or not by determining whether the text or image is clicked by a user (Step S201).

[0086] In a case where the customer page is not requested, other general pages are presented to users (Step S201: No, S202).

[0087] In a case where the customer page is requested (Step S201: Yes), the control unit 20 executes the CGI program and the like to create web page data representing a Login page as illustrated in FIG. 9, and sends the created data to the terminal 500 having sent a request for the access (Step S203).

[0088] Upon determination of that there is sent a request for accessing the customer page in the step S201, the control unit 20 creates identification information (e.g., cookie) and sends it to the terminal 500 being connected, thereby to recognize the terminal 500 in the following session. Accordingly, the "terminal 500" in the following procedures indicates the terminal 500 having accessed the customer page in the step S201.

[0089] The user of the copier 300 operates the terminal 500 to input predetermined identification (ID) information including his/her e-mail address, password, company ID, and the like. The input ID information is sent to the center 100 by selecting (clicking) a "Send" button prepared on the Login page.

[0090] If the CCU 21 of the center 100 receives the ID information from the terminal 500, the control unit 20 accesses the customer-ID database 22 to determine whether the received ID information has been registered in the customer-ID database 22, thereby to authenticate customers (Step S204).

[0091] In the customer authentication procedure of the step S204, in the case where the ID information sent from the terminal 500 does not exist in the customer-ID database 22 or where the given ID information does not represent the correct ID, the user of the terminal 500 is not authenticated as the registered customer, so that any general pages other than the customer page are provided (Step S204: No, Step S202).

[0092] In the case where it is determined that the user of the terminal 500 is a registered customer (Step S204: Yes), a procedure for providing individual information to the customer is carried out.

[0093] The control unit 20 accesses the customer-information database 22, based on the ID information sent from the terminal 500 to specify the copier 300 (model ID) used by the customer. Then the control unit 20 collaborates with the information collecting control unit 10

to retrieve the status information of the specified copier 300 from the customer-information database 12 (Steps S205, S206).

5 [0094] The control unit 20 analyzes the status information of the copier 300 obtained in the step S206, and selects a suggestion file to be provided to the customer (Step S300).

[0095] Specific description will now be made to a process for analyzing the status information and selecting the suggestion matter, as carried out in Step S300.

[0096] Followings are some examples of suggestion matters to be selected.

15 1. Upgrade or Multiplication based on Frequently Used Functions:

- a) suggest to upgrade to an advanced model based on copy amount;
- b) suggest to multiply a paper tray, if the copy amount exceeds a predetermined threshold;
- c) suggestion to multiply the copier to distribute concentrated tasks;
- d) suggest to introduce a printing press (printing machine) if the user tends to designate much amount of copies from 1 volume of original;
- e) suggest to add a sorter to the copier if the user tends to designate many copies from 1 volume of original;
- f) suggest to use a printer if the copy volume is usually small;
- g) suggest to add a duplex copy unit originals tend to include plural pages;
- h) suggest to initialize duplex copy setting if the copier has already employed the duplex copy unit;
- i) suggest to add a stapler if each of the original documents tends to include plural pages while copy amount is usually large;
- j) suggest to multiply a printer or copier if interruption for copying often occurs in a case where the copier includes printer function; or
- k) suggest to install an additional tray feed if the user frequently changes the size of paper cassette.

2. Tips based on Rarely Used Functions:

- a) suggest how to reorder priority of paper tray feeds so as to set the least frequently used tray feed at the bottom;
- b) suggest to set lower priority to the least frequently used paper tray feed after comparing the usage frequency in consideration of the directions of the sheets in the tray feed;
- c) suggest how to initialize settings, if the most of the settings have been unchanged;
- d) suggest how to use the function which has

- never been used before;
- e) suggest how to register facsimile numbers to a phonebook in the copier having facsimile function, if the user often calls the same number; or
 - f) suggest how to use duplex copy function, combine copy function, or the like if such the function being useful for reducing paper consumption have been unused.

3. Suggestions regarding to Consumable:

- a) indicate remaining of consumable (such as paper, staples of stapler, etc.), based on the number of consumed papers by paper size or number of times sheets of paper are stapled;
- b) indicate remaining of consumable in order to optimize inventory for better environmental solution; or
- c) suggest environmental solution by showing ways to reduce paper consumption.

[0097] Of the above examples, some will now be described in detail with reference to the drawings.

[0098] A process for selecting a suggestion file suggesting to upgrade the copier 300 with replacing it with an advanced model based on the copy amount, will now be described with reference to FIG. 10A.

[0099] The control unit 20 refers to the status information retrieved in step S206, and obtains information representing the copy amount during a predetermined period (e.g. 1 month) (Step S310).

[0100] The control unit 20 accesses the product-information database 26 so as to obtain information representing the performance of all models of the copiers (Step S311).

[0101] The control unit 20 sorts the information obtained in the step S311 by their performances (in this case, for example, copy speed (copy volume/min)), and creates a table as shown in FIG. 10B. In the table, the models are categorized in accordance with the appropriate situations based on copy amount per predetermined period (in this case, 1 month) (Step S312).

[0102] The control unit 20 applies the copy amount of the user obtained at step S310 to the table to determine whether the model of the currently-used copier 300 is adequate for its current status (in this case, current copy amount) of the copier 300 (Step S313).

[0103] In the case where the copy amount obtained in the step S310 is within a range of adequate copy amount for the model of the currently-used copier 300, it is determined that the model of the currently-used copier 300 is suitable for its status (Step S313: Yes). That is, it is unnecessary for selecting the suggestion file suggesting to upgrade the copier 300 to an advanced model, and hence the process is terminated now.

[0104] On the other hand, if the copy amount obtained in the step S310 exceeds the adequate range, it is de-

termined that the model of the currently-used copier 300 is not suitable for its current status (Step S313: No). In this case, the control unit 20 selects the advanced model(s) which is suitable (tolerable) for the copy amount obtained in step S301 (Step S314), and the process is completed.

[0105] Explanation will now be made to another process for suggesting to multiply the copier 300 to reduce task concentration (suggestion for task distribution (1)), with reference to the flowchart shown in FIG. 11A.

[0106] The control unit 20 creates a histogram, as shown in FIG. 11B, showing the copy amount by each time zone, based on the status information obtained in step S206 (Step S320).

[0107] The control unit 20 obtains a peak value α of the copy amount from the histogram shown in FIG. 11B. And, the control unit 20 determines whether the obtained peak value α exceeds a threshold value (predetermined reference copy amount for determining whether to suggest the task distribution) (Step S321).

[0108] In the case where it is determined that the peak value α does not exceed the threshold value, i.e. there is no need to suggest to task distribution (Step S321: No), the process is terminated.

[0109] On the contrary, in the case where it is determined that the peak value α exceeds the threshold value, i.e. the customer makes a large number of copies intensively and especially during a certain time zone (Step S321: Yes), the control unit 20 determines to the suggest to multiply the copier 300 for task distribution (Step S322), and the process is completed.

[0110] Another example for suggesting task distribution (suggestion for task distribution (2)) will now be described with reference to the flowchart shown in FIG. 12A.

[0111] The control unit 20 creates a histogram as shown in FIG. 12B showing working rate of the copier 300 by each time zone based on the status information obtained in the step S206 (Step S330).

[0112] The control unit 20 determines whether there is any time zone corresponding to an working rate which exceeds a threshold percentage β % (predetermined reference rate for determining whether copying tasks should be distributed by multiplying the copier 300, or the copier 300 should be replaced with a faster model), from the histogram shown in FIG. 12B (Step S331).

[0113] In the case where there is no such a time zone showing working rate exceeding the threshold rate β % (Step S331: No), the process is terminated.

[0114] On the contrary, in the case where there is a time zone showing working rate exceeding the threshold rate β % (Step S331: Yes), i.e. in the case where the copier 300 is intensively used during a predetermined time zone, the control unit 20 determines to suggest the customer to multiply the copier 300 for distributing the copying tasks or to upgrade the currently-used copier 300 to a faster advanced model (Step S332), and the process is terminated.

[0115] Explanation will now be made to a process for suggesting the customer to employ an additional paper tray feed, with reference to the flowchart shown in FIG. 13.

[0116] The control unit 20 determines whether an optional paper tray feed has already been installed in the copier 300, based on the status information obtained in step S206 (Step S340).

[0117] If the optional paper tray feed has already been installed in the copier 300 (Step S340: Yes), the process is terminated.

[0118] On the contrary, in the case where the optional paper tray feed has not yet been installed therein (Step S340: No), the control unit 20 obtains information representing the copy amount of the copier 300 during a predetermined period (e.g. 1 month), from the status information retrieved in step S206 (step S341).

[0119] The control unit 20 determines whether the copy amount shown in the status information retrieved in step S341 exceeds a predetermined threshold value (a predetermined copy amount which is a reference value to determine whether to suggest the customer to install an additional paper tray feed) (Step S342).

[0120] If it is determined that the copy amount shown in the status information obtained in step S341 does not exceed the threshold value (Step S342: No), the process is terminated.

[0121] On the contrary, in the case where it is determined that the copy amount shown in the status information obtained in step S341 does exceed the threshold value (Step S342: Yes), the control unit 20 selects the suggestion file indicating that the paper tray feed should be added to the copier 300 (Step S343), and the process is completed.

[0122] Another process for suggesting the customer to add a printing press (printing machine) will now be described with reference to the flowchart shown in FIG. 14.

[0123] The control unit 20 accesses the product-information database 26 to obtain the performance information to calculate the copy cost by the copier 300 (Step S350). In this case, the control unit 20 calculates copy cost per page, which includes the cost for sheet, toner, photoconductor, etc.

[0124] The control unit 20 calculates a ratio of the copy cost obtained in the step S350 to a unit cost for generating print master (printing cost/copy cost) (Step S351), and calculates a threshold value M (the number of consumed papers for copying a single-page-document) based on which the cost of copying is calculated (Step S352).

[0125] The control unit 20 obtains the number of times a single-page document (original) is copied to a plurality of sheets during a predetermined period (e.g. 1 month), based on the status information obtained in step S206. The control unit 20 determines whether the number of times the single-page document is copied to the M sheets (pages) or more, calculated in the step S352, ex-

ceeds a predetermined number (Step S353).

[0126] In the case where it is determined that the number of times the single-page document is copied to the M sheets (pages) or more does not exceed the predetermined number (Step S353: No), the process is terminated.

[0127] On the contrary, in the case where it is determined that the number of times the single-page document is copied to the M sheets (pages) or more does exceed the predetermined number (Step S353: Yes), the control unit 20 determines that it is cheaper to print the document using a printing press (printing machine) rather than copying the document using the copier 300. The control unit 20 determines to select the suggestion file indicating that introducing the printing press (printing machine) is helpful for cost reduction (Step S354), and the process is completed.

[0128] The processes raised above are just examples. Any other various processes for selecting the suggestion file may be carried out. Those processes may be carried out simultaneously in step S300, or those may be carried out sequentially one after another.

[0129] Upon completion of the process for analyzing the status information of the copier 300 in step S300, the control unit 20 retrieves the suggestion file corresponding to the suggestion to be made, from the suggestion-information database 24 (Step S208).

[0130] The control unit 20 executes the CGI program, etc., and creates web page data including the suggestion information retrieved in the step S208 (Step S209). Note that, an area for displaying personalized information including the suggestion information retrieved in the step S208 is prepared in the customer page at a position above another information (general information), as indicated by a broken line shown in FIG. 15. Hereinafter, such the area will be referred to as "personalized information area". The control unit 20 creates web page data in such a manner that the suggestion information retrieved in the step S208 is displayed in this personalized information area. Specifically, as shown in FIGS. 16 and 17, user name based on the ID information received in the step S204 is displayed in the personalized information area together with the suggestion information retrieved in the step S208.

[0131] FIG. 16 is a diagram showing an example of a suggestion message indicating useful tips (of function) being displayed through the Web page. As shown, the suggestion message (text) retrieved from the suggestion-information database 24 is displayed in the personalized information area. In the suggestion message, "Click Here" is linked to the corresponding suggestion-information file indicating the tips (how to use the function).

[0132] FIG. 17 is a diagram showing an example of a suggestion message suggesting to install an optional device (parts, peripherals, etc., hereinafter referred to as "optional device") being displayed through the Web page. The suggestion message retrieved from the sug-

gestion-information database 24 is displayed in the personalized information area. In the suggestion message "Click Here" is linked to file representing the performance information (including technical information, spec., and the like) of the corresponding optional device.

[0133] The control unit 20 controls the CCU 21 to send the created web page data to the terminal 500 (Step S210), and the information providing process is completed.

[0134] In the above-described process for analyzing the status of the copier 300 (Step S300), the suggestion matter may be selected under the consideration of the section to which the user having accessed the customer page belongs. In this case, the control unit 20 accesses the customer-ID database 22 to specify the section based on the ID information received in step S204. In the case where the specified section often uses the copier 300, the control unit 20 is likely to select the suggestion file indicating the tips. On the other hand, the specified section is related to management affairs, the control unit is likely to select the suggestion file suggesting introduction of new models.

[0135] In the case where an optional device or new model is suggested, the displayed page may be linked to an order form page for purchasing that optional device or new model.

[0136] In the above embodiment, the explanations have been made to the case of the copier 300. However, the present invention may be applicable to another image data processor (image forming apparatus, imaging machine) such as a printer, facsimile machine, and the like.

[0137] As explained above, in the information collecting/providing system 1000 according to the first embodiment of the present invention, if the customer of the copier 300 accesses the customer page, the latest status information of the copier 300 being used by the customer is automatically retrieved and analyzed. Then, any suggestion corresponding to the analyzed result is made and informed through the Web page. Thus, the manufacturer/vendor of the copier 300 can easily and effectively suggest the customer of the copier 300 to introduce another function (device, parts, peripherals, etc.) or to replace the currently-used copier with a new machine. In addition, the user of the copier 300 can easily and effectively get the helpful and useful suggestion information.

[0138] In the above first embodiment, unless the user accesses the Web site, he/she can not obtain the suggestion information. If the control unit 20 of the center 100 has an e-mail server function, the company (manufacturer and/or vendor) of the copier 300 can actively send suggestion information to the user. In this case, the user can be informed about the timing for replenishing/replacing any consumables or consumed supplies (e.g. toner, developer, paper, etc.) in the copier 300, based on the collected status information. Such the structure of an information collecting/providing system

will now be described in the second embodiment.

[0139] The structure of the information collecting/providing system of this embodiment has substantially the same as that of the information collecting/providing system 1000 of the first embodiment. Thus, this embodiment also employs the information collecting/providing system 1000, and the description of it is omitted.

[0140] Process by the information collecting/providing system 1000 according to this embodiment will now be explained with reference to the flowchart shown in FIG. 18.

[0141] In each of the copiers 300, the various sensors 31 detect the number of consumed papers and the consumption of toner at each operation in the copier 300 (Step S401).

[0142] The control unit 30 of the copier 300 sends information representing the number of consumed papers and the consumption of toner which are obtained in the step S401 (hereinafter referred to as "consumable information"), to the transmission device 400. The receiver 41 of the transmission device 400 receives the consumable information. The control unit 40 controls the storage unit 42 to store the consumable information received from the copier 300 and the status information as shown in FIG. 3. The control unit 40 controls the transmitter 43 to send the consumable information and status information stored in the storage unit 42, to the center 100 through the PSTN 2 at predetermined intervals (Step S402).

[0143] In the center 100, the CCU 11 of the information collector 110 receives the consumable information and status information from the transmission device 400. The controller 10 controls the customer-information database 12 to store the received information (Step S403). At this time, controller 10 controls the customer-information database 12 so that the information is classified customer by customer.

[0144] The control unit 10 calculates the duration for each of expendable, based on the consumable information stored in the customer-information database 12 (Step S404). The control unit 10 analyzes the status information regarding the copier 300 for a predetermined period (1 month, for example), thereby calculating the usage frequency (how often the customer uses the copier 300) copier by copier (that is, customer by customer). The control unit 10 refers to information representing the usage amount of each consumable. The control unit 10 calculates how many days each of the consumable lasts from the present time on, in the case where the copier 300 is actually used at the calculated usage frequency.

[0145] The control unit 10 determines whether the duration (days) calculated in the step S404 is equal to or less than a predetermined reference period (e.g. 1 week, 1 month, etc.) (Step S405).

[0146] In the case where it is determined that the obtained duration is equal to or less than the predetermined reference period (Step S405: Yes), the control unit 10 accesses the customer-information database 12

[0147] to refers to flag (not shown) being affixed to the consumable information stored in the customer-information database 12 (hereinafter referred to as "consumption flag"). If the consumption flag indicates "0", it means that the obtained duration is not equal to or less than the predetermined reference period, whereas if the consumption flag indicates "1", it means that the obtained duration is equal to or less than the predetermined reference period. This consumption flag is reset to "0", every time each corresponding one of the consumable is replaced with a new one.

[0148] The control unit 10 determines whether the referred consumption flag indicates "0" (Step S406).

[0149] In the case where it is determined that the consumption flag indicates "0" in step S406, i.e. in the case where the obtained duration is not equal to or less than the predetermined reference period (Step S406: Yes), the control unit 10 sets the consumption flag to "1" (Step S407).

[0150] On the contrary, in the case where it is determined that the consumption flag indicates "1", it means that the obtained duration which is equal to or less than the predetermined reference period has already been registered, and that a later-described information providing process had already been done, and the control unit 10 terminates the process (Step S406: No).

[0151] In the case where the consumption flag is set to "1" in the step S407, the control unit 10 informs the control unit 20 of the information provider 120 that there is detected one consumable which lasts for the duration equal to or less than the predetermined reference period, and carries out the later-described information providing process (Step S410).

[0152] In the case where it is determined that the obtained duration is not equal to or less than the predetermined reference period in the step S406, the control unit 10 accesses the customer-information database 12 to determine whether the consumption flag corresponding to the information of the corresponding consumable is "1" (Step S408).

[0153] If it is determined that this consumption flag is "1" (Step S408: Yes), it means that the consumable which was determined to last for the duration equal to or less than the predetermined reference period, has already been replenished or replaced. Hence, the control unit 10 resets the consumption flag to "0" (Step S409), and terminates the process.

[0154] On the contrary, in the case where it is determined that the consumption flag does not indicate "1" (Step S408: No), there is no need to perform the later-described information providing process for informing the customer that the currently-used consumable should be replenished or replaced with new one, and hence the process is terminated.

[0155] The information providing process (step S410 or S510) as carried out by the information provider 120 will now be explained with reference to FIGS. 19 to 24.

[0156] The information providing process for provid-

ing information (step S410) by an e-mail will now be described with reference to FIGS. 19 to 21.

[0157] The control unit 20 accesses the customer-ID database 22 to retrieve user information of the copier 300 including the consumable determined to last for the duration which is equal to or less than the predetermined reference period in the step S405. The control unit 20 determines destination of an e-mail based on the user attribute information corresponding to the retrieved user information (Step S411).

[0158] According to the user attribute information, the users are categorized, for example, into "ordinary user" who merely operates the copier 300, "key operator" who can handle maintenance tasks (e.g. refilling the toner, etc.) of the copier 300, "purchaser" who is in charge of purchasing the goods relating to the copier 300 (e.g., toner, paper, etc.), and "business manager" who is in charge of managing the business of the company.

[0159] Under this situation, since the control unit 20 is going to send e-mails to inform the users that life of the consumable will end soon, the control unit 20 selects the users belonging to the "key operator" who performs replenishment task, and to "purchaser" who purchases the consumable. The control unit 20 obtains e-mail addresses of them from the customer-ID database 22 at step S411.

[0160] Then, the control unit 20 retrieves adequate suggestion message in a fixed form from the suggestion-information database 24, based on the user-attribute information retrieved in the step S411 and the consumable information indicating the consumable determined to last for the duration equal to or less than the predetermined reference period in the step S405 (Step S412). Specifically, in the case where the consumable concerned is a toner unit, there are retrieved suggestion file representing a suggestion message for suggesting the key operator to replace the currently-used toner unit with a new one, and another suggestion file representing a suggestion message for suggesting the purchaser to purchase a new toner unit.

[0161] The control unit 20 executes a predetermined program to create e-mails including the suggestion messages shown in the suggestion files retrieved in the step S412 (Step S413). Particularly, the control unit 20 creates e-mails addressed to the key operator (FIG. 20) and addressed to the purchaser (FIG. 21).

[0162] The control unit 20 controls the CCU 21 to transmit the e-mails created in the step S413 to the e-mail addresses obtained in the step S411 (Step S414).

[0163] A process for providing information through the Web page will now be described with reference to FIGS. 22 to 24.

[0164] In this embodiment, likewise the first embodiment, the Web site is established by the information provider 120, and includes the customer page.

[0165] In the case where a customer accesses the customer page (Step S421: Yes), the control unit 20 executes the CGI program and the like to create web page

data representing the Login page as shown in FIG. 9. The control unit 20 controls the CCU 21 to send the created data to the terminal 500 having accessed the customer page.

[0165] The user of the copier 300 operates the terminal 500, inputs predetermined ID information including his/her e-mail address, password, company ID, and the like through the Login page. The input ID information is sent to the center 100 by selecting (clicking) "Send" button prepared in the Login page.

[0166] In the center 100, when the CCU 21 of the information provider 120 receives the ID information from the terminal 500, the control unit 20 authenticates the user of the terminal 500, based on the received ID information (Step S422).

[0167] The control unit 20 determines whether the user of the terminal 500 is a registered customer, by comparing the ID information sent from the terminal 500 with the customer ID information stored in the customer-ID database 22.

[0168] In the customer authentication procedure of step S122, in the case where the ID information sent from the terminal 500 does not exist in the customer-ID database 22, or where an adequate set of ID information is not included in the input information, the user of the terminal 500 is not authenticated as a registered customer, thereby being provided with a general page other than the customer page (Step S423: No, Step S429).

[0169] On the contrary, in the case where it is determined that the user of the terminal 500 is a registered customer (Step S423: Yes), the control unit 20 accesses the customer-ID database 22, and retrieves user attribute information of him/her (Step S424).

[0170] Then, the control unit 20 access the customer-information database 12 through the control unit 10 to refer to the status information corresponding to the customer concerned. The control unit 20 determines whether there are consumption flags indicating "1" (Step S425).

[0171] If there are consumption flags representing "1", i.e. life of the corresponding consumable will end within equal to or less than a predetermined reference period (Step S425: Yes). In this case, the control unit 20 retrieves an adequate suggestion file from the suggestion-information database 24, based on the corresponding consumable and the user attribute information retrieved in the step S424 (Step S426).

[0172] Subsequently, the control unit 20 executes the CGI program and the like to create web page data including the suggestion message shown in the suggestion file retrieved in the step S426 (Step S427). In the case where the consumable concerned is the toner unit and the user concerned belongs to the key operator, the control unit 20 creates a Web page as shown in FIG. 23 which includes the suggestion message informing the user that the currently-used toner unit will be exhausted soon. On the contrary, if the user concerned belongs to the purchaser, the control unit 20 creates a Web page

as shown in FIG. 24 which includes the suggestion message for suggesting the user to purchase a new toner unit.

5 [0173] The control unit 20 controls the CCU 21 to send the web page data created in step S427 to the terminal 500 (Step S428), and terminates the process.

[0174] According to the second embodiment, the center 100 periodically and automatically collects information representing the consumption of the consumable of the copier 300, and calculates the duration for which each of the consumable lasts from the present time on, based on the usage frequency of the copier 300 customer by customer. In the case where the calculated duration is equal to or less than the predetermined reference period, the center 100 informs the corresponding customer (user) about the duration by e-mail. In this structure, each customer can be aware of adequate timings for replenishing or replacing the currently-used consumable used in the copier 300, even if the user is away from the copier 300.

20 [0175] Further, the duration for which corresponding consumable lasts is calculated in accordance with the usage frequency of each copier 300 (by each customer). Hence, unlike the case where the customer is informed about the timing for replenishing or replacing the corresponding consumable based on the consumption (or the remaining) of the consumable, the customer is informed of the adequate timing for replenishing or replacing the consumable.

25 [0176] Not only informing the customer of the above exemplified messages by e-mail, the customer is able to be informed of them through the Web page. Therefore, the customer can certainly be aware of the timing for replenishing/replacing the consumable.

30 [0177] In the above second embodiment, the customer of the copier 300 is merely informed about the timing for replenishing/replacing the consumable of the copier 300. The system may present opportunity to purchase the consumable together with presenting information about the replenishment/replacement timing.

35 [0178] Explanations will now be made to an information collecting/providing system, wherein a customer can purchase consumable when it is the time to replenish/replace the currently-used consumable, according to the third embodiment of the present invention.

40 [0179] FIG. 25 schematically shows the structure of an information collecting/providing system 2000 according to this embodiment.

45 [0180] As shown in FIG. 25, the structure of the information collecting/providing system 2000 of this embodiment is substantially the same as that of the information collecting/providing system 1000 according to the first and second embodiments. However, the information collecting/providing system 2000 of this embodiment further includes a delivery center 150 which is connected with the center 100 via a private network 4.

50 [0181] The delivery center 150 is a facility for supplying the company 200 with goods including the consum-

able such as a toner unit to be installed in the copier 300. The delivery center 150 is also managed by the organization which is managing the center 100. The private network 4 which interconnects the center 100 and the delivery center 150 may be WAN, intranet, or the like which is realized by arbitrary network medium such as a leased line, a PSTN, and an IP network. In this embodiment, the private network 4 employs a leased line.

[0182] The structure of the center 100 according to this embodiment will now be described with reference to FIG. 26. The structure of the center 100 according to this embodiment is substantially the same as that of the center 100 according to the first and second embodiments. However, as shown in FIG. 26, the center 100 of this embodiment includes an order accept server 130 (hereinafter referred to as "OAS 130"), unlike the structure of the center 100 according to the first and second embodiments. In FIG. 26, the same components are identified by the same reference numerals as those components of the center 100 of the first embodiment which is illustrated in FIG. 2, and are not explained in this embodiment.

[0183] The OAS 130 may be a Web server realized by a computer such as a workstation, etc., and is connected to the Internet 3. The OAS 130 executes the CGI program and the like to provide order form pages for ordering the consumable through the Internet 3. The OAS 130 is also connected to the private network 4, and sends order information to the delivery center 150.

[0184] The structures of the copier 300 and transmission device 400 included in the information collecting/providing system 2000 of this embodiment are the same as those of the copier 300 and transmission device 400 shown in FIG. 6 according to the first and second embodiments. Hence, no description will be made to the structures of the copier 300 and transmission device 400 of this embodiment.

[0185] Since the information collecting process carried out by the information collecting/providing system 2000 according to this embodiment is substantially the same as the information collecting process according to the second embodiment shown in FIG. 18, explanation of the process according to this embodiment is omitted.

[0186] An information providing process (Step S510) which is carried out by the information collecting/providing system 2000 according to this embodiment will now be described with reference to the flowchart shown in FIG. 27.

[0187] This information providing process starts if it is determined that the duration for which corresponding consumable last is equal to or less than a predetermined reference period, in the information collecting process shown in FIG. 18.

[0188] The control unit 20 accesses the customer-ID database 22 to obtain user information corresponding to the copier 300 including the consumable determined to last for the duration equal to or less than the predetermined reference period in step S405. The control unit

20 specifies a receiver of an e-mail for providing information based on the user attribute information corresponding to the obtained user information (Step S511). At this time, the control unit 20 sends the e-mail for informing the receiver that the available duration of the corresponding consumable is drawing to an end. Hence, the control unit 20 retrieves e-mail address information corresponding to the purchaser and key operator.

[0189] The control unit 20 accesses the customer-information database 12 through the control unit 10 to refer to the purchase flag affixed to the information representing the consumable. This purchase flag is to indicate whether the expendable, determined to last for the duration equal to or less than the predetermined reference period in the step S405, has already been purchased. If this purchase flag indicates "0", it implies that the corresponding consumable has not yet been purchased. The control unit 20 determines whether the purchase flag indicates "0" (Step S512).

[0190] In the case where the purchase flag indicates "1", i.e. the consumable has already been purchased (Step S512: No), it is unnecessary for providing an order form Web page (described later) for ordering consumable, and for suggesting the receiver (purchaser) of the e-mail to purchase the consumable. Thus, the above procedures through steps S412 to S414 according to the second embodiment of the present invention are executed with targeting only the key operator (receiver of the e-mail) determined in step S511. That is, the control unit 20 sends the e-mail as shown in FIG. 20 suggesting the key operator to replace the corresponding consumable (Step S513), and terminates the process.

[0191] On the contrary, in the case where the purchase flag indicates "0", that is, the corresponding consumable has not yet been purchased (Step S512: Yes), the control unit 20 supplies the OAS 130 with the information representing the corresponding consumable (Step S514).

[0192] The OAS 130 creates web page data representing an order form page as shown in FIG. 28, for ordering the consumable, based on the information representing the consumable which is supplied in step S514. The OAS 130 assigns a predetermined URL (Uniform Resource Locator) to the order form page, and uploads the created data to appropriate storage area prepared for the Web site (Step S515). As illustrated in FIG. 28, the order form page includes a list of items corresponding to the consumable determined in the step S405 that whose duration is equal to or less than the predetermined reference period.

[0193] In the case where the receiver determined in step S511 is the purchaser (Step S516: Yes), the OAS 130 provides the control unit 20 in the information controller 120 with information representing the URL assigned to the uploaded order form page (Step S517). In this case, the control unit 20 may store the provided information representing the URL, in an internal memory,

or the like.

[0194] The control unit 20 accesses the suggestion-information database 24 to retrieve a suggestion file suggesting the purchaser (receiver) to purchase the corresponding consumable determined in step S405 that whose duration is equal to or less than the predetermined reference period (Step S518). The retrieved suggestion file includes text data representing that the corresponding consumable is available for the duration equal to or less than the predetermined reference period, and suggesting the purchaser to purchase the consumable to be replaced for the currently-used one.

[0195] The control unit 20 executes the CGI program and the like to create an e-mail including the URL information provided in the step S517 and the suggestion message retrieved in the step S518 (Step S519). FIG. 29 is a diagram showing an example of thus created e-mail. As shown in FIG. 29, the URL information (e.g. <http://www.order.##.jp>) which is assigned to the order form page uploaded in the step S515 is displayed in the e-mail. The URL information is written in hyper text or the like, thus being linked to the order form page.

[0196] The control unit 20 controls the CCU 21 to send the created e-mail to the e-mail address of the purchaser specified in step S511 (Step S520).

[0197] On the contrary, in the case where the e-mail receiver determined in the step S511 is not the purchaser, i.e. the receiver is the key operator (Step S516), the flow jumps to step S513. The control unit 20 sends an e-mail suggesting the key operator to replace the currently-used consumable with a new one.

[0198] An ordering process for ordering consumable through the order form page created and uploaded in the step S515 will now be described with reference to the flowchart shown in FIG. 30.

[0199] The customer receives the e-mail sent in the step S520 by the terminal 500 or the like. In the case where the customer wants to purchase consumable through the order form page, he/she operates the terminal 500 and clicks the URL information shown in the received e-mail. Upon this operation, the terminal 500 transmits the URL information to the OAS 130. That is, the customer request for accessing the order form page (Step S531: Yes). In the case where the customer does not send a request for transmission of the order form page (Step S531: No), the process is terminated.

[0200] Upon receiving the request from the terminal 500, the OAS 130 sends web page data representing the order form page shown in FIG. 28, to the terminal 500 having sent the request for the order form page (Step S532).

[0201] The terminal 500 receives the web page data, and displays the order form page. The customer selects a desired item shown in the displayed order form page by selecting a corresponding radio button, etc., and inputs a desired number of the item(s) through a prepared text box or the like. In the case where the customer wants to purchase the corresponding item, he/she clicks

"Purchase" button, thereby information representing the desired item and the number of each item (hereinafter referred to as "order information") is sent to the OAS 130 (Step S533: Yes). On the other hand, in the case where the customer clicks "Cancel" button (Step S533: No), the process is terminated.

[0202] Upon reception of the order information from the terminal 500, the OAS 130 informs the control unit 10 of the information collector 110 that the instruction for ordering the consumable has been given. The control unit 10 accesses the customer-information database 12 to sets the purchase flag corresponding to the consumable concerned to "1", so as to indicate that order for the corresponding consumable is accepted, (that is, the item concerned is sold) (Step S534).

[0203] The OAS 130 sends the order information received in the step S533 to the delivery center 150 through the private network 4 (Step S534).

[0204] Above reception of the order information, the delivery center 150 carries out predetermined delivery service (Step S536), and the process is completed.

[0205] According to the above third embodiment, the customer is certainly informed about the timing for replenishing the consumable in the copier 300 by e-mail. In addition, the customer can purchase any desired consumable immediately upon reception of the information representing the timing for replenishing the consumable, since the Web page for ordering the consumable is linked to the received e-mail.

[0206] Since the Web page for ordering the consumable is managed by the manufacturer/vendor of the copier 300, the customer can purchase genuine supplies (consumable, parts, and the like). As a result, the manufacturer/vendor can effectively promote reducing damages or troubles in the copier 300 caused by low quality third party supplies.

[0207] In the above third embodiment, likewise the second embodiment, the Web page including a message suggesting the customer to replace the currently-used expendable(s) with new one(s) may be provided to the customer having accessed the customer page. In this case, the Web page may be linked to the order form page for ordering the consumable.

[0208] In the third embodiment, the customer determines whether he/she purchases the consumable or not, every time the control unit 20 sends information representing the timing for replacing the consumable. The center 100 may automatically delivery the items to the customers who made contracts with the manufacturer/vendor (hereinafter, referred to as "quick delivery service"), in response to informing the customer about consumable replenishment.

[0209] Such operations carried out by the information collecting/providing system 2000 will now be described as the fourth embodiment according to the present invention.

[0210] Since the information collecting process according to this embodiment is the same as that accord-

ing to the second embodiment, processes after the information collecting process will now be described. In this embodiment, the customer ID information stored in the customer ID database 22 also represents whether the customer made a contract for the quick delivery service or not.

[0211] An automatic ordering process (Step S610) executed in this embodiment will now be explained with reference to the flowchart shown in FIG. 31.

[0212] The control unit 20 accesses the customer-information database 12 through the control unit 10 to determine whether the purchase flag corresponding to the consumable concerned indicates "0" (Step S611).

[0213] In the case where it is determined that the purchase flag indicates "1", i.e. the consumable has already been purchased (Step S611: No), the control unit 20 terminates the process.

[0214] On the contrary, in the case where it is determined that the purchase flag indicates "0", (Step S611: Yes), the control unit 20 accesses the customer ID database 22 to determine whether the customer of the copier 300 including the consumable concerned, made a contract with the company for the quick delivery service or not (Step S612).

[0215] In the case where it is determined that the customer has not been under contract to the manufacturer/vendor (Step S312: No), the control unit 20 executes the procedures of the steps 512-520 and 531-536, that is, providing information by e-mail and accept orders (Step S613).

[0216] In the case where it is determined that the customer have been under the contract with the manufacturer/vendor (Step S612: Yes), the control unit 20 provides the OAS 130 with information regarding the specified consumable (hereinafter, referred to as "order information") (Step S614).

[0217] Upon reception of the order information, the OAS 130 sends an acknowledge signal to the control unit 20. Upon reception of the acknowledgement signal, the control unit 20 accesses the customer-information database 12 through the control unit 10 to set the purchase flag corresponding to the specified consumable to "1" (Step S615).

[0218] The OAS 130 sends the order information received in the step S614 to the delivery center 150 through the private network 4 (Step S616), and the delivery center 150 carries out a predetermined delivery service (Step S617).

[0219] According to the above fourth embodiment, the expendable, which is determined that whose duration is equal to or less than the predetermined reference period, is automatically delivered to the customer who made the contract with the company. In this structure, the customer receives the consumable without going through the ordering process.

[0220] In the above fourth embodiment, the explanation has been made to the cases where the consumable is a toner, ink cartridge, paper, photoconductor, as ex-

ample. However, the present invention is applicable to order (purchase) any other parts. For example, the copier 300 may include sensors for detecting any breakdown or troubles of parts, thus, the copier 300 is able to send warning signal to the center 100. Upon reception of the warning signal, the center 100 may arrange the parts delivery. This structure is helpful for quick recovery, because the parts concerned are delivered to the customer soon after the trouble occurred.

[0221] In the above-described preferred embodiments, the explanations have been made to the case where the terminal 500 is a personal computer. However, the terminal 500 may be any other device which can receive e-mails and access and display the Web page through the Internet 3. For example, the terminal 500 may be a mobile communications terminal, such as a PDA (Personal Data Assistant), cellular phone, and the like.

[0222] The computer program product according to this application comprises program code means that may be executed by suitable data processing means provided in the respective apparatuses or components disclosed, e.g. by a standard microprocessor, by an application specific integrated circuit etc.

[0223] Various embodiments and changes may be made thereonto without departing from the broad spirit and scope of the invention. The above-described embodiments are intended to illustrate the present invention, not to limit the scope of the present invention. The scope of the present invention is shown by the attached claims rather than the embodiments. Various modifications made within the meaning of an equivalent of the claims of the invention and within the claims are to be regarded to be in the scope of the present invention.

35

Claims

1. An information collecting/providing system characterized by comprising a center (100), a transmitter (400), and a customer terminal (500) which are connected with each other through a communications network (2, 3), and

40 wherein said transmission device (400) sends status information sets representing status of products used by customers, and

45 said center (100) includes

50 a customer-information storage unit (22) which stores customer information, a suggestion-information storage unit (24) which stores suggestion information sets representing suggestions relating to the products,

55 a status-information collector (110, 12) which collects and stores the status information sets transmitted by said transmitter

- (400),
 a suggestion-information selector (20)
 which selects suggestion information sets
 stored in the suggestion-information stor-
 age unit (24), based on the status informa-
 tion sets collected by said status-informa-
 tion storage collector (110); and
 a suggestion-information providing unit
 (20) which provides said customer terminal
 (500) of a customer corresponding to the
 status information set with the suggestion
 information selected by said suggestion-in-
 formation selector (20). 10
5. The information collecting/providing system according to any one of claims 1 to 5, **characterized in that:**
- achieving high performance with the functions concerned.
6. The information collecting/providing system according to any one of claims 1 to 5, **characterized in that:**
- the status information represents the usage fre-
 quency of each function of said product; and
 said suggestion-information selector (20) re-
 fers to the status information to find out rarely-
 used functions, and selects the suggestion in-
 formation set in consideration of the function
 concerned. 15
7. The information collecting/providing system according to claim 6, wherein said suggestion-infor-
 mation selector (20) selects a suggestion informa-
 tion set representing how to use the function con-
 cerned. 20
8. The information collecting/providing system according to any one of claims 1 to 7, **characterized in that:**
- the status information represents consumption
 of consumables in the products;
 said system further includes a consumption an-
 alyzer which analyzes the consumption of the
 consumables which is shown in the status in-
 formation; and
 said suggestion-information selector (20) se-
 lects the suggestion information sets, based on
 a result of analysis done by the consumption
 analyzer. 25
3. The information collecting/providing system according to claim 1 or 2, **characterized by** further comprising a status analyzer which analyzes the status information, and
 wherein said suggestion-information selector (20) selects the suggestion information based on a result of analysis done by said status analyzer (20). 35
4. The information collecting/providing system according to any one of claims 1 to 3, **characterized in that:**
- the status information represents the usage fre-
 quency of each function of said product; and
 said suggestion-information selector (20) re-
 fers to the status information to find out fre-
 quently used functions, and selects a suggestion information set in consideration of the function concerned. 40
5. The information collecting/providing system according to claim 4, **characterized in that** said sug-
 gestion-information selector (20) selects the sug-
 gestion information set suggesting a product 50
9. An information collecting/providing system **charac-
 terized by** comprising:
- an information collector (110) which collects
 status information representing consumption of
 consumables for use in an image data proces-
 sor (300) through a first communications net-
 work (2);
 a consumption analyzer (20) which analyzes
 the consumption of the consumables shown in
 the status information collected by the informa-
 tion collector, and determines whether the con-
 sumable should be changed or replaced with a
 new consumable; and
 a consumption indicator (120), being connect-
 ed to terminals used by the users of the image
 data processors through a second communica-
 tions network (3), which indicates on the termi-
 nal that there is the expendable which should
 be changed or replaced based on the determina-
 tion made by said consumption analyzer (20). 55

10. The information collecting/providing system according to claim 9, **characterized in that** said consumption indicator (120) sends information representing that the consumable should be changed or replaced with a new consumable to the terminal (500). 5
11. The information collecting/providing system according to claim 9 or 10, **characterized in that** said consumption indicator (120) sends the terminal (500) with information representing an order form for purchasing a new consumable together with an indication that the consumable should be replaced with a new consumable. 10
12. A method for collecting/providing information, **characterized by** comprising:
collecting status information representing status of a product possessed by a customer;
storing suggestion information representing a suggestion in accordance with the status of the product;
selecting the suggestion information stored at said suggestion information storing step, based on the status information collected at said information collecting step; and
providing the customer with the suggestion information selected at said suggestion information selecting step.
15
13. A method for collecting/providing information **characterized by** comprising:
storing customer information;
collecting status information representing status of products used by customers registered in the customer information stored at the customer information storing step, through a communications network (2);
storing the suggestion information representing a suggestion to be given to the customer;
selecting the suggestion information stored at the suggestion information storing step, based on the status information collected at said information collecting step; and
providing the customer with the suggestion information selected at the suggestion-information selecting step, through a communications network.
30
14. The method according to claim 13, **characterized by** further comprising:
receiving a request signal for requesting suggestion information, from a customer terminal of the customer; and
specifying a customer having sent the request
55
- signal received in said request-information receiving step, based on the customer information stored said customer-information storing step, and
wherein said suggestion-information selecting step selects suggestion information, based on status information of the produced used by the customer specified in said customer specifying step.
15. The method according to any one of claims 13 and 14, **characterized by** further comprising
analyzing the status information, and
wherein said suggestion-information selecting step selects the suggestion information based on a result of analysis done at said status information analyzing step.
20
16. The method according to any one of claims 13 to 15, **characterized in that**:
the status information represents the usage frequency of each function of said product; and said suggestion-information selecting step refers to the status information to find out frequently-used functions, and selects the suggestion information in consideration of the functions concerned.
25
17. The method according to claim 16, **characterized in that** said suggestion-information selecting step selects the suggestion information representing a product achieving high performance with the functions concerned.
30
18. The method according to any one of claims 13 to 17, **characterized in that**:
the status information represents the usage frequency of each function of said product; and said suggestion-information selecting step refers to the status information to find out rarely-used functions, and select the suggestion information in consideration of the functions concerned.
35
19. The method according to claim 18, **characterized in that** said suggestion-information selecting step selects the status information representing how to use the functions concerned.
40
20. The method according to any one claims 13 to 19, wherein:
the status information represents consumption of consumables in the products;
45

the method is characterized by further comprising a consumption analyzer which analyzes the consumption of the consumables shown in the status information; and
 said suggestion-information selecting step selects the suggestion information based on a result of analysis done at said consumption analyzing step.

21. An apparatus for collecting/providing information, characterized by comprising:

a connector for connecting said apparatus to a communications network (11, 21);
 a customer-information storage unit (22) which stores customer information including information regarding customers and information representing products used by the customers, in association with each other;
 a suggestion-information storage unit (24) which stores suggestion information sets each representing a suggestion to be given to the customers;
 a receiver (10) which controls said connector (11) to receive status information representing status of the product used by the customer shown in the customer information stored in said customer-information storage unit;
 a status-information storage unit (12) which stores the status information received by said receiver (10);
 a request receiver (20) which controls said connector (21) to receive a request signal for requesting the suggestion information, from a customer terminal (500);
 a customer-authentication unit (20) which specifies a customer having sent the request signal received by said request receiver, based on the customer information stored in said customer-information storage unit (22);
 a status analyzer (20) which retrieves status information of the product used by the customer specified by the customer-authentication unit (20) from said status-information storage unit (12), and analyzes the retrieved status information;
 a suggestion-information selector (20) which selects the suggestion information sets from said suggestion-information storage unit (24), based on a result of the analysis done by said status analyzer (20); and
 a suggestion-information transmitter (20) which controls said connector (21) to transmit the suggestion information sets selected by said suggestion-information selector (20) to the customer terminal (500).

22. The apparatus according to claim 21, characterized in that:

the status information represents the usage frequency of each function of said product;

said status analyzer (20) analyzes status of frequently-used functions, and
 the suggestion-information selector (20) selects suggestion information representing a product achieving high performance with the functions concerned, from said suggestion-information selector (20).

23. The apparatus according to claim 21 or 22, characterized in that:

the status information represents the usage frequency of each function of said product;
 said status analyzer (20) analyzes status of rarely-used functions, and
 said suggestion-information selector (20) selects the suggestion information set representing how to use the functions concerned, from said suggestion-information storage unit (24).

24. The apparatus according to any one of claims 21 to 23, characterized in that:

the product may be an image data processor (300);
 said apparatus further includes a product-information storage unit (26) which stores product information including information representing a performance level of said image data processor (300);
 the status information represents an amount of processing done by said image data processor (300);
 said status analyzer (20) analyzes whether the amount of processing is tolerable for the image data processor (300) based on the performance level of the image data processor; and
 the suggestion-information selector (20) selects the suggestion information set which suggests that the image data processor (300) should be multiplied, in a case where said status analyzer indicates that the amount of processing is intolerable for said image data processor (300).

25. The apparatus according to claim 24, characterized in that said suggestion-information selector (20) selects the suggestion information set for suggesting that another image data processor corresponding to the amount of processing should be purchased, in a case where said status analyzer indicates that the amount of processing is intolerable for said image data processor (300).

- 26.** The apparatus according to claims 24 or 25, characterized in that:

the status information represents consumption
of consumables in said image data processor 5
(300);
said status analyzer (20) analyzes the status
information to determine whether the expend-
able should be replaced with a new expend-
able, based on the consumption of the consum- 10
ables shown in the status information; and
said suggestion-information selector (20) se-
lects the suggestion information indicating that
there is the consumable which should be re-
placed, and another suggestion information 15
representing an order form for purchasing a
new expandable unit.

- 27.** The apparatus according to claim 24 or 25, characterized in that:

20

the status information represents consumption
of consumables in said image data processor;
said status analyzer analyzes the status infor-
mation to determine whether the consumable 25
should be replaced with a new consumable,
and
wherein said apparatus further includes an or-
dering unit (20) which controls said connector
(21) to transmit order information to a vendor 30
of the consumable, in a case where the result
of analysis done by the status analyzer indi-
cates that the consumable should be replaced
with a new consumable.

35

- 28.** A computer program product comprising program
code means for executing the method steps accord-
ing to any of 12 to 20, when said program is exe-
cuted on a computer, or for causing a computer to
function as the apparatus according to any one of 40
claims 21 to 27, when said program is executed on
a computer.

- 29.** The computer program product comprising pro-
gram code means according to claim 28 that are 45
recorded on a computer-readable data carrier.

50

55

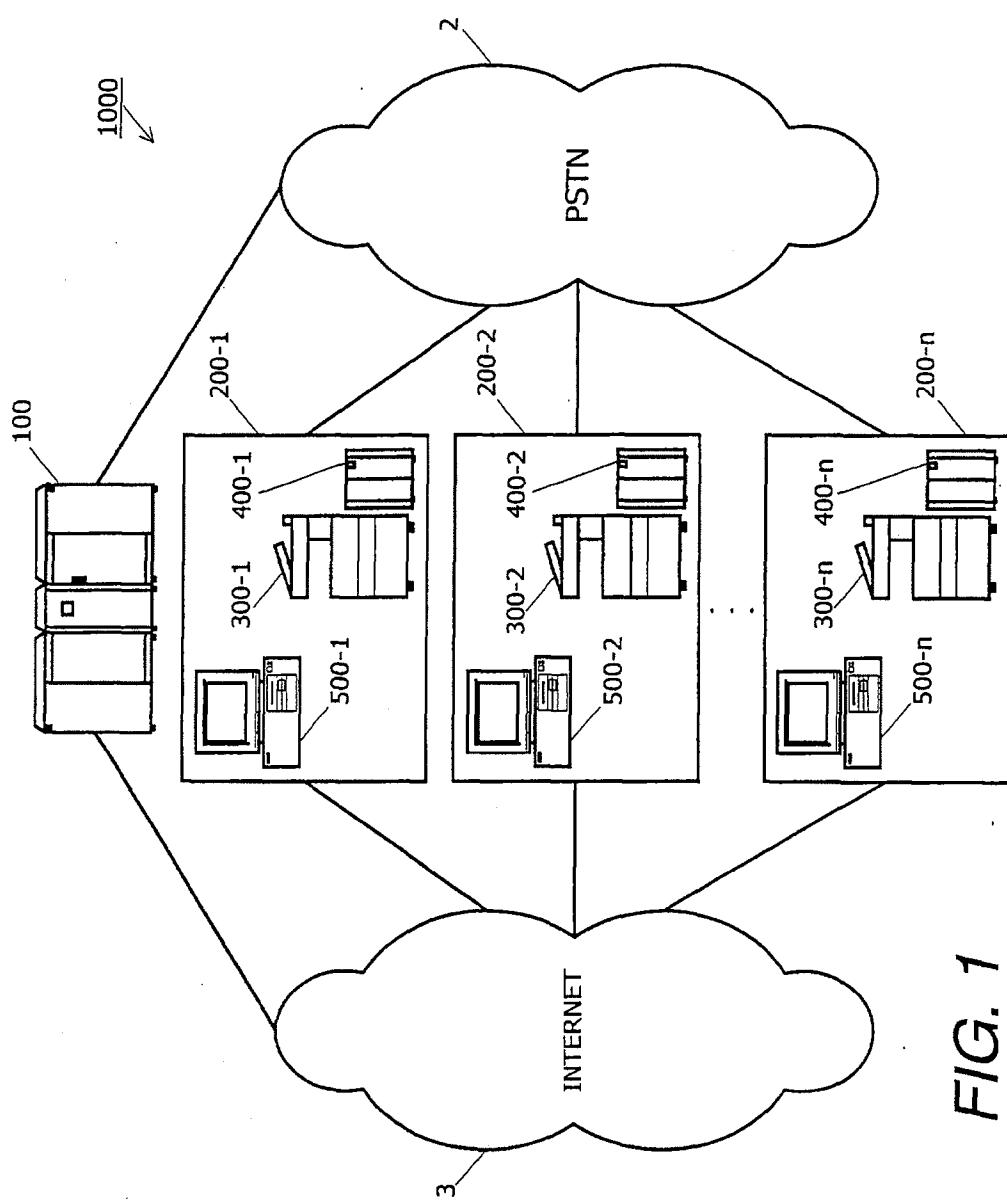


FIG. 1

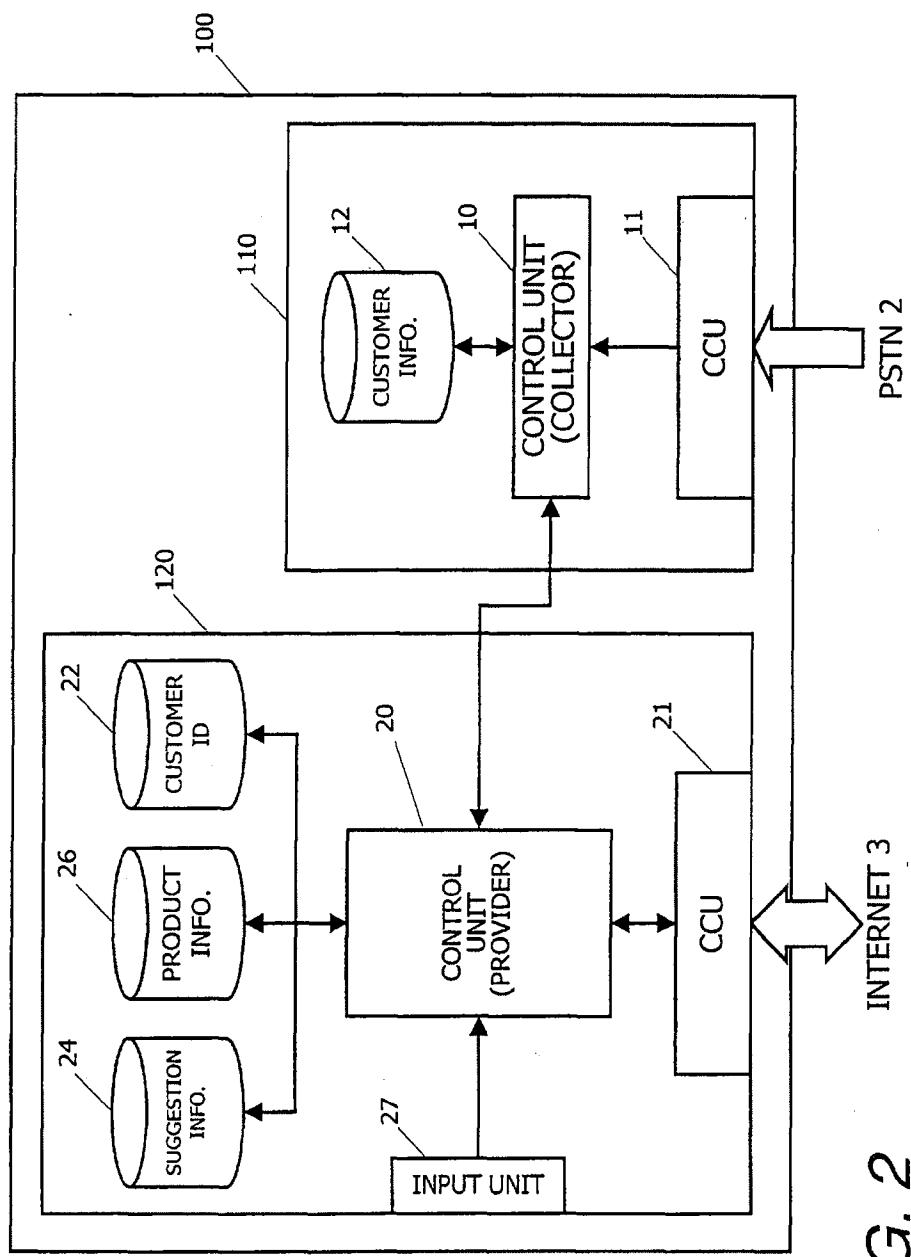


FIG. 2

PAGES OF ORIGINAL	500
TOTAL COPY AMOUNT	600

DATE	2000/09/01
MODEL	A001
SERIAL NO.	122512

ITEM	AMOUNT	RATE (%)	ITEM		AMOUNT	RATE (%)
			EDIT	ERASE		
COPY AMOUNT (PAPER SIZE)						
A3	150	32.5%			20	—
B4	130	28.1%			10	—
A4	120	26.0%			50	—
B5	50	10.8%			100	—
OTHERS	12	2.6%			50	—
TOTAL	462	100.0%				
DUPLEX/ BOOK/SERIES/ COMBINE						
1ST FEED	150	31.9%			100	0.36
2ND FEED	120	25.5%			100	0.36
3RD FEED	100	21.3%			20	0.07
4TH FEED	60	12.8%			30	0.11
BY-PASS	40	8.5%			5	0.02
DUPLEX	0	0.0%			12	0.04
LCT	0	0.0%			5	0.02
TOTAL	470	100.0%			3	0.01
STAPLING						
POSITION 1	200	54.1%	MODE 1	COVER	150	—
POSITION 2	100	27.0%		CHAPTER	20	—
BOTH SIDES	50	13.5%		SLIP SHEET	70	—
SLANT	20	5.4%	MODE 2	DF-ON	210	—
TOTAL	370	100.0%		SORT	100	—
PUNCHING				STACK	50	—
	400	—		SORT/STACK	20	—
REDUCE/ ENLARGE						
FULL SIZE	400	0.0%				
REDUCE	50	0.0%				
ENLARGE	50	0.0%				
TOTAL	500	0.0%				

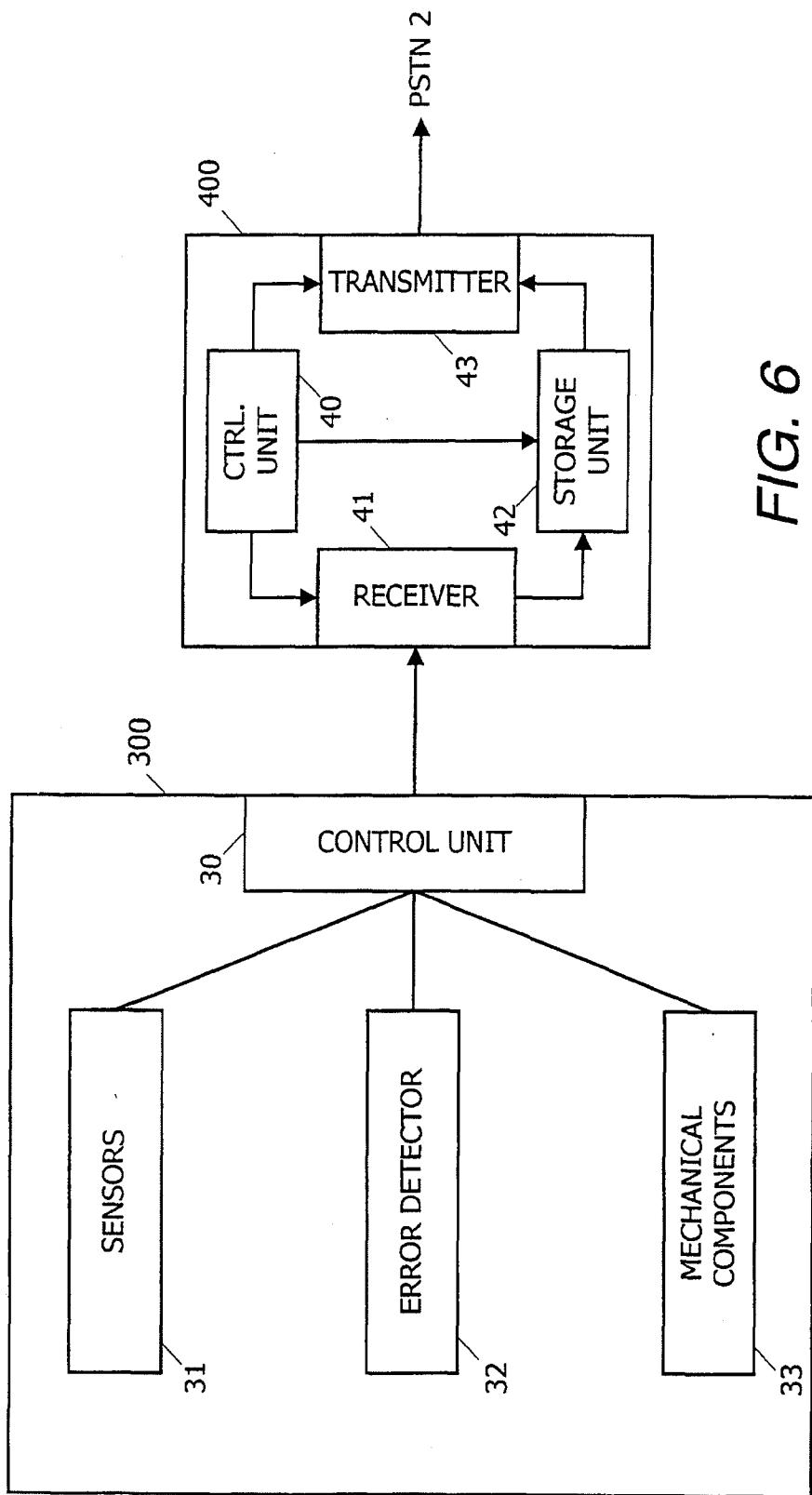
FIG. 3

COMPANY ID	MODEL ID	SECTION	E-MAIL ADDR.	PASSWORD	USER ATTRIBUTE
AA	A001 (1224)	GENRAL AFFAIRS SECT.	a@aa.++.jp	*****	KEY OPERATOR
			b@aa.++.jp	*****	ORDINARY USER
			c@aa.++.jp	*****	ORDINARY USER
	A005 (1225)	PLANNING SECT.	d@aa.++.jp	*****	PURCHASER
			e@aa.++.jp	*****	ORDINARY USER
BB	A001 (3440) A002 (3441)	ACCOUNT SECT.	a@bb.++.jp	*****	KEY OPERATOR
			b@bb.++.jp	*****	ORDINARY USER
		MATERIAL	c@bb.++.jp	*****	ORDINARY USER
•	•	•	•	•	•
•	•	•	•	•	•
•	•	•	•	•	•

FIG. 4

MODEL: A001		
MODEL: A002		
FUNCTION	SPEC.	
FEEDER	MODE	ADF MODE, ...
	ORG. SIZE	A3-B6, DLT, ...
	MAX	50 PAGES
⋮	⋮	⋮
FINISHER	TRAY	PAPER SIZE: ...
	STAPLE	PAPER SIZE: ...
	PUNCH	—

FIG. 5



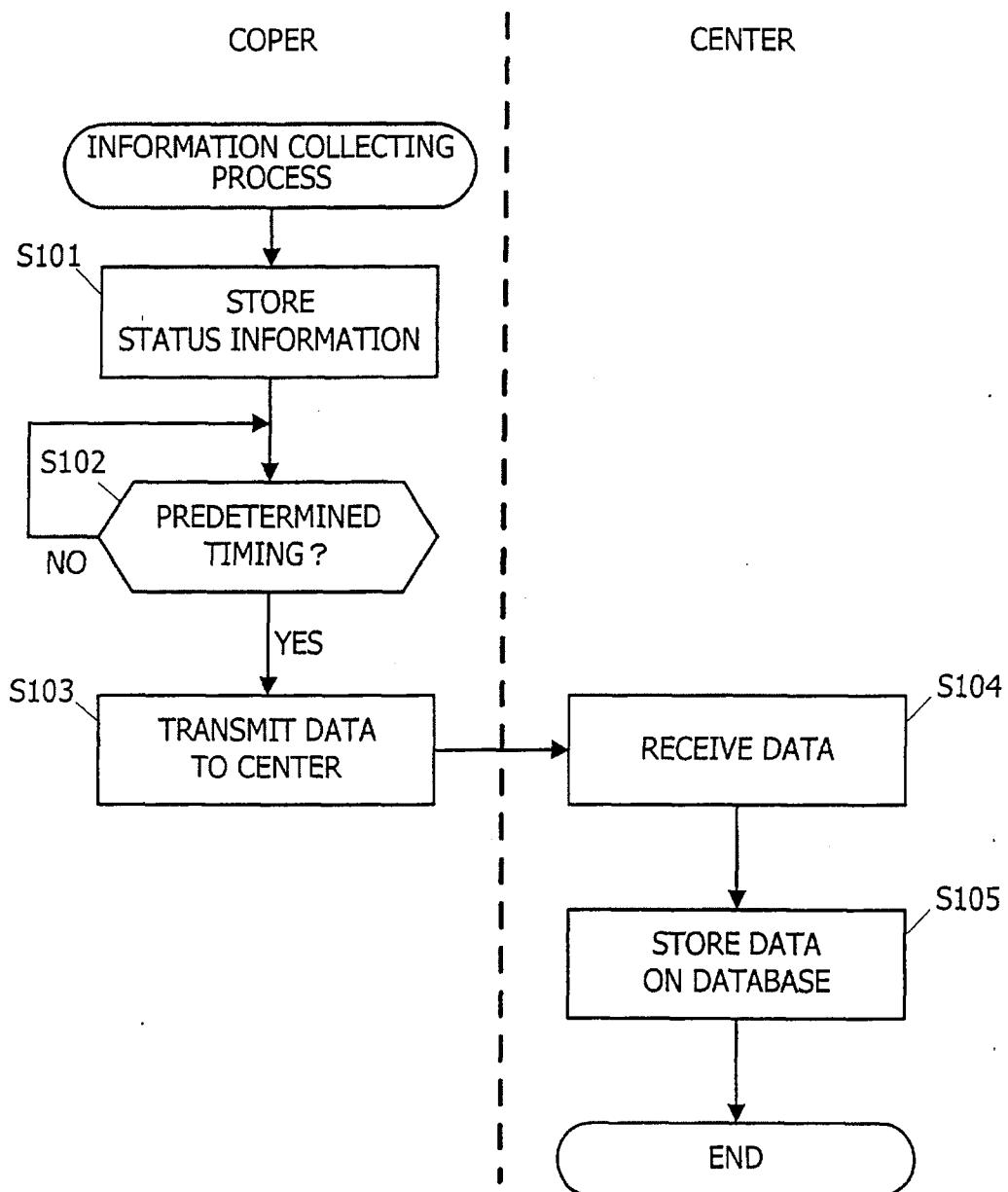


FIG. 7

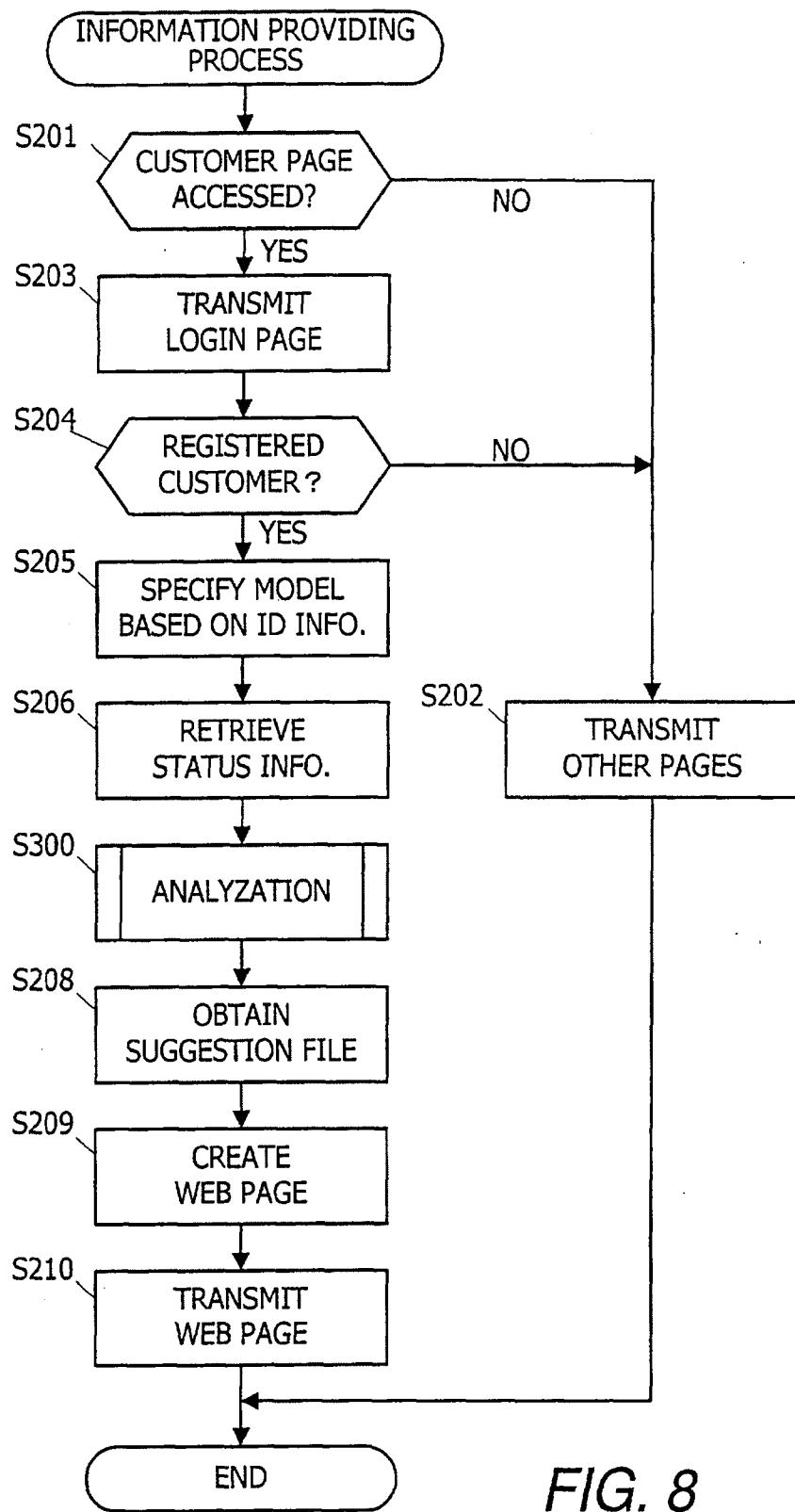


FIG. 8

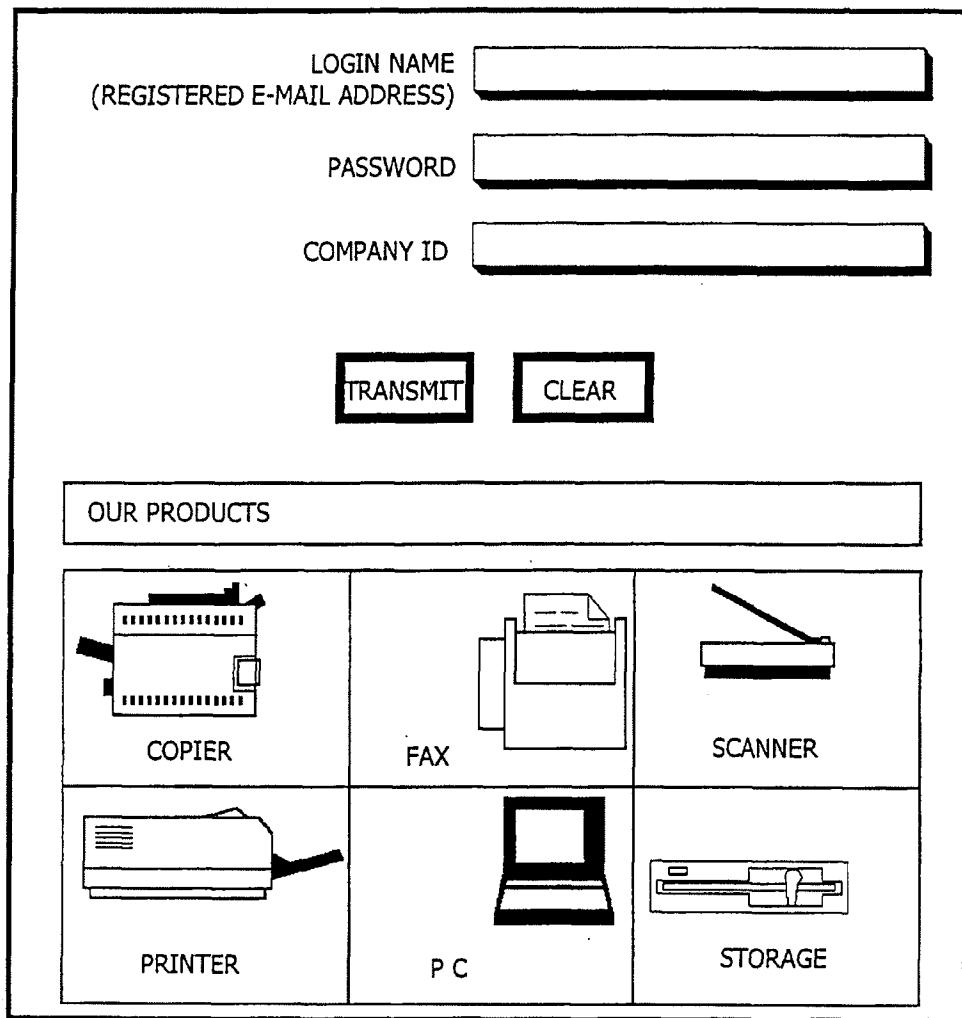


FIG. 9

FIG. 10A

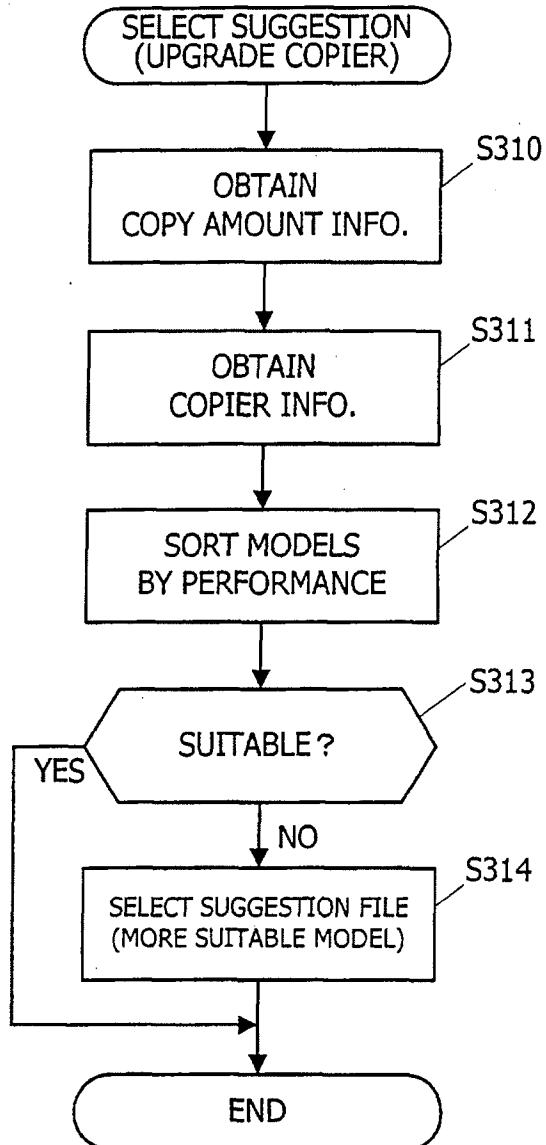
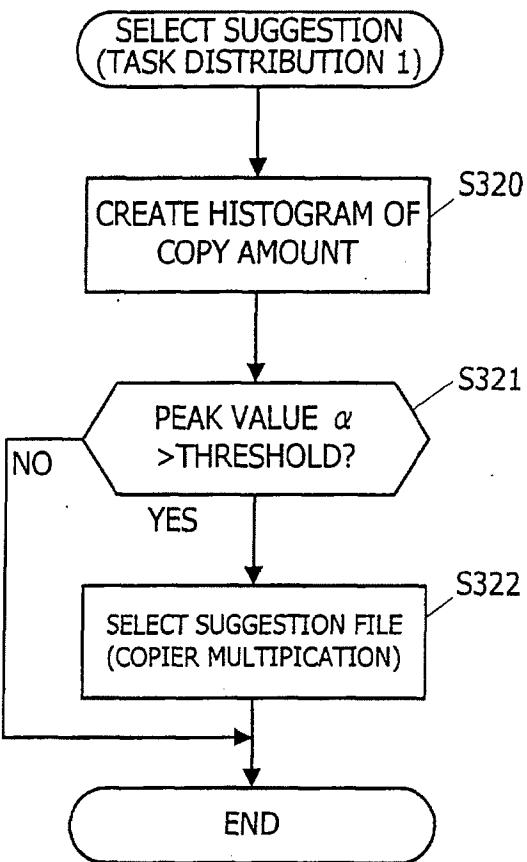
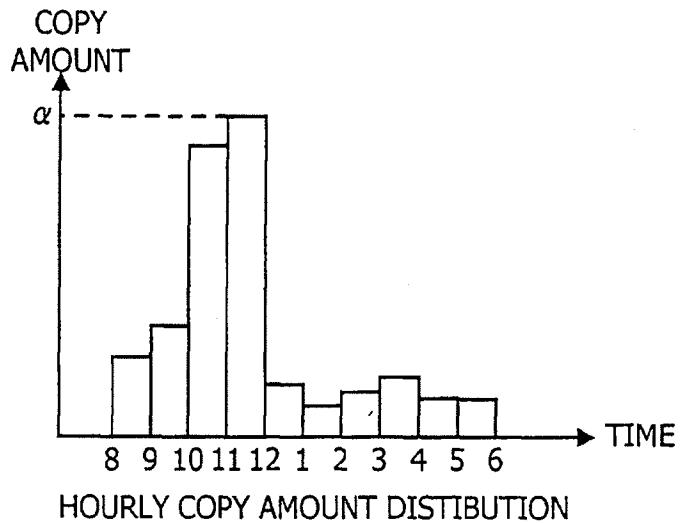


FIG. 10B

SUITABLE MODEL FINDER TABLE	
COPY/MON.	MODELS
1,000-5,000	MODEL A
	MODEL B
	MODEL C
5,000-10,000	MODEL D
	MODEL E
10,000-50,000	MODEL F
	MODEL G
50,000-100,000	MODEL H

↑ FAST (LOW VOLUME)
FASTER (MID VOLUME)
FASTEST (HIGH VOLUME) ↓

*FIG. 11A**FIG. 11B*

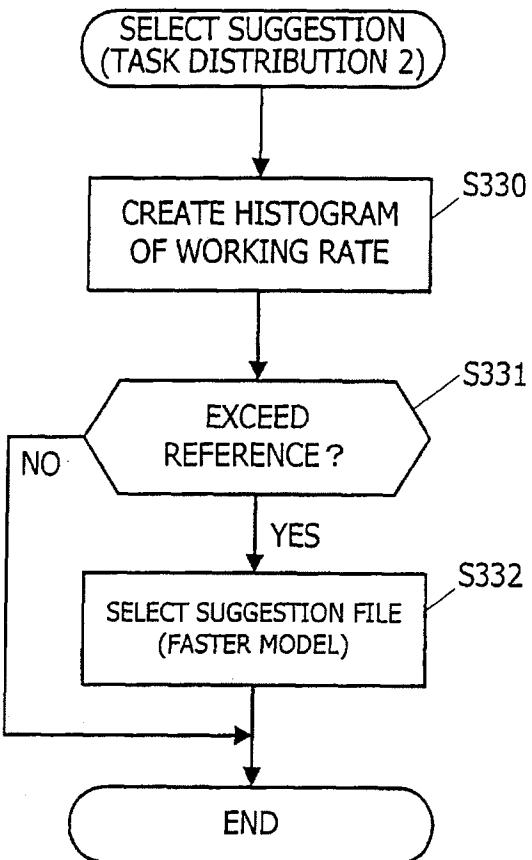


FIG. 12A

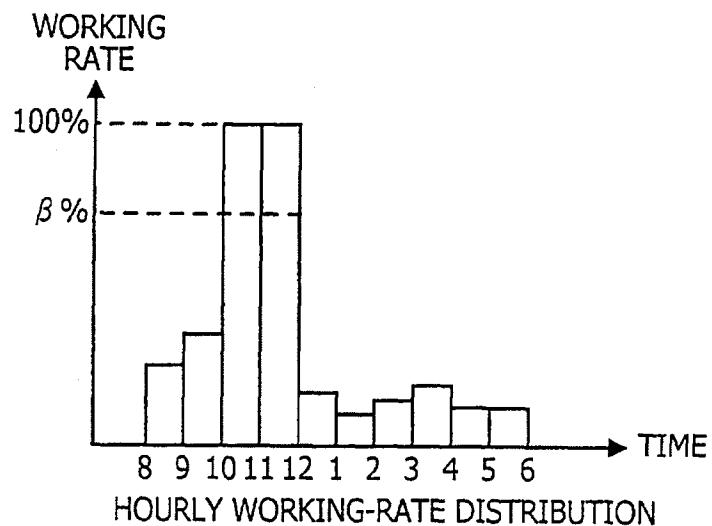


FIG. 12B

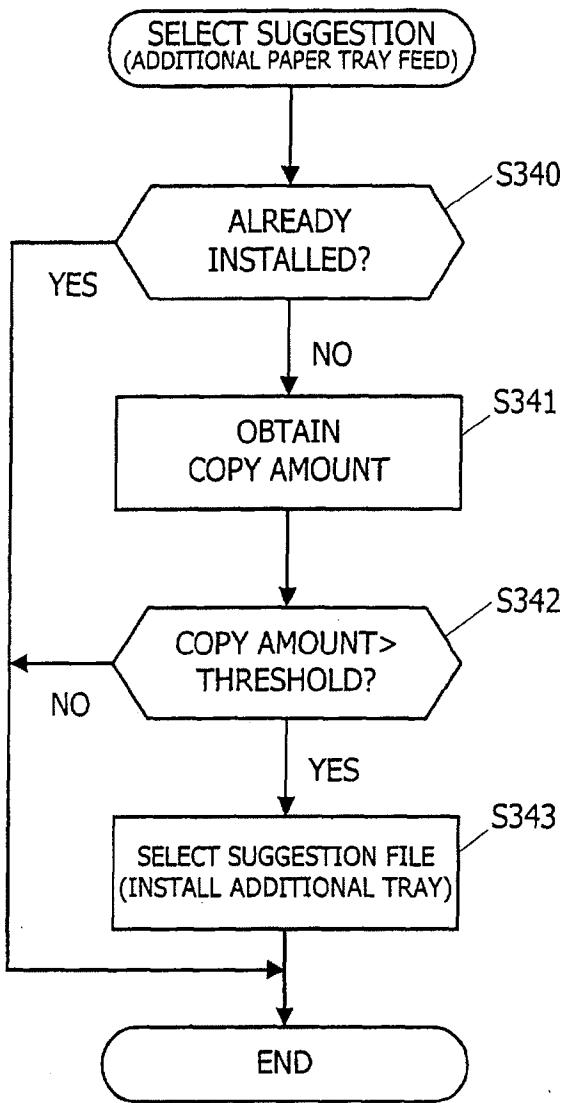


FIG. 13

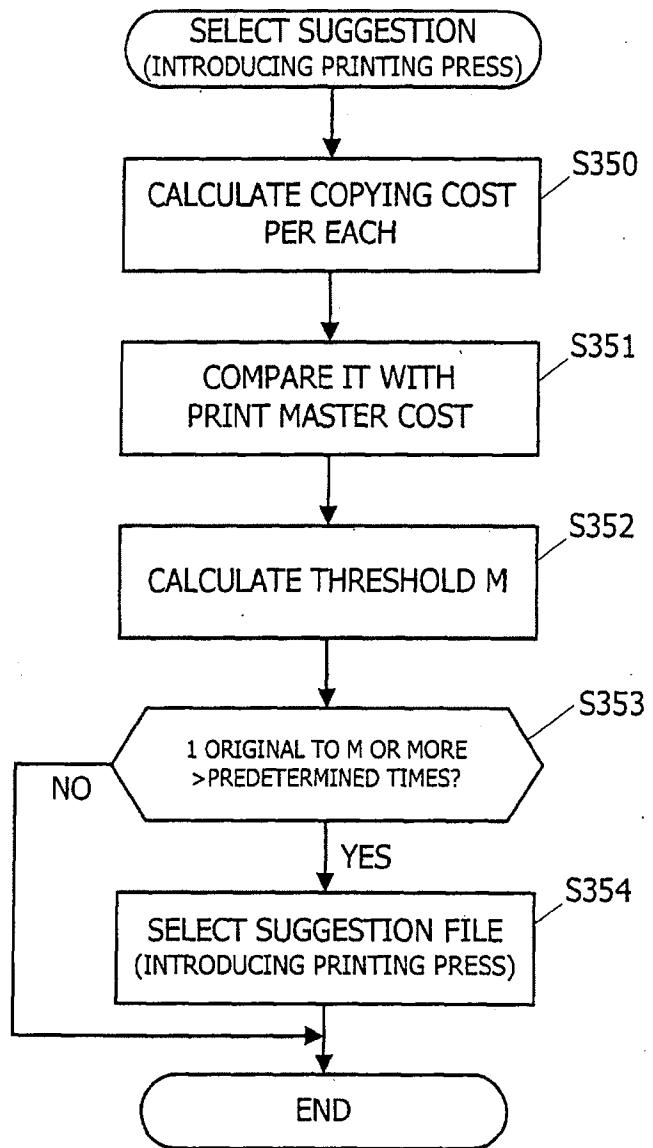


FIG. 14

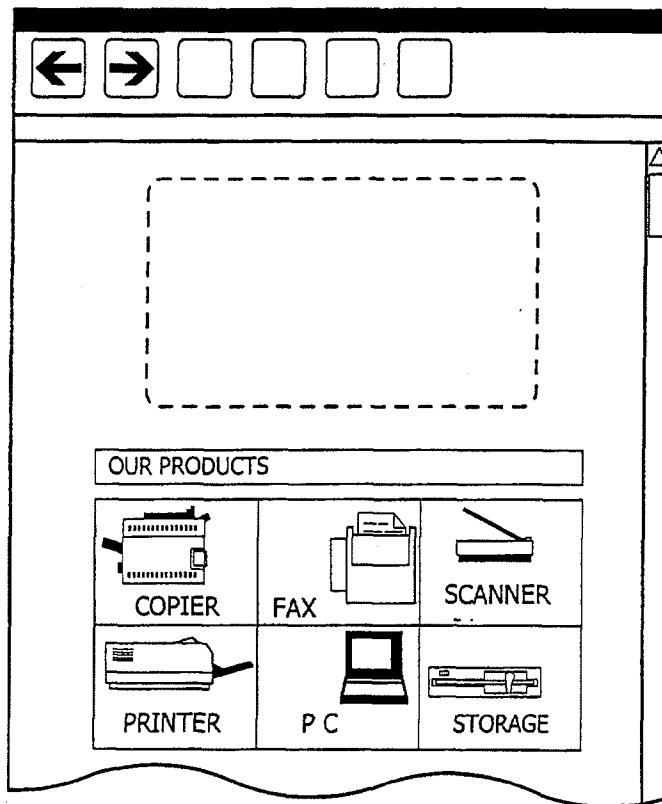


FIG. 15

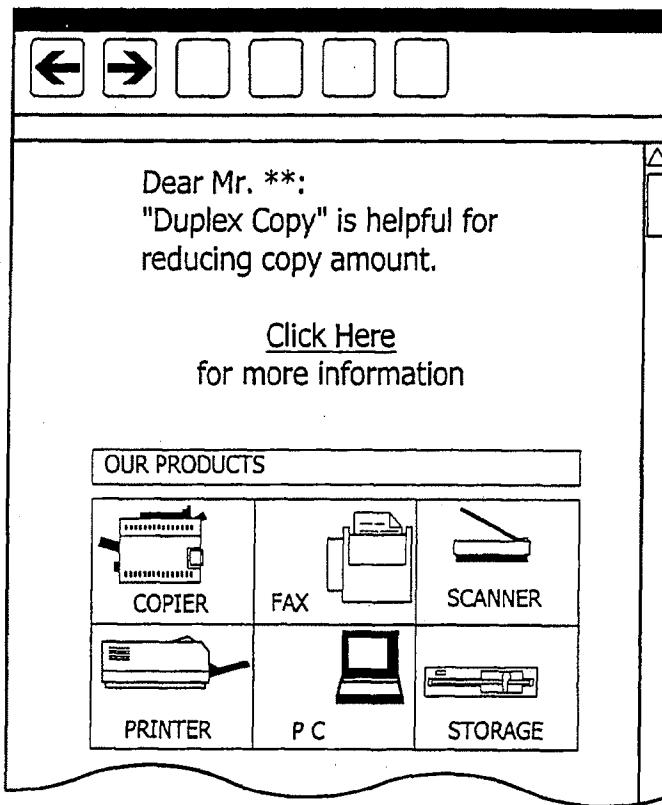


FIG. 16

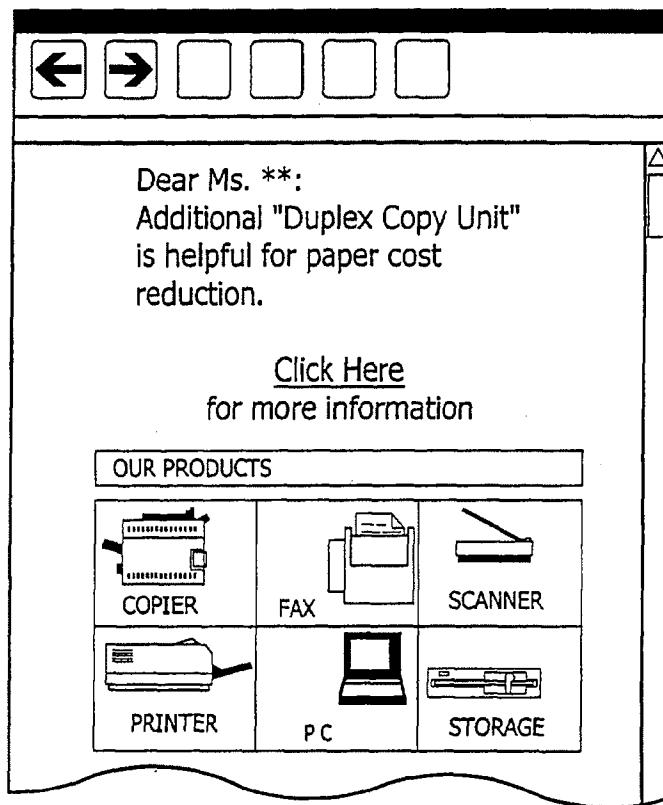


FIG. 17

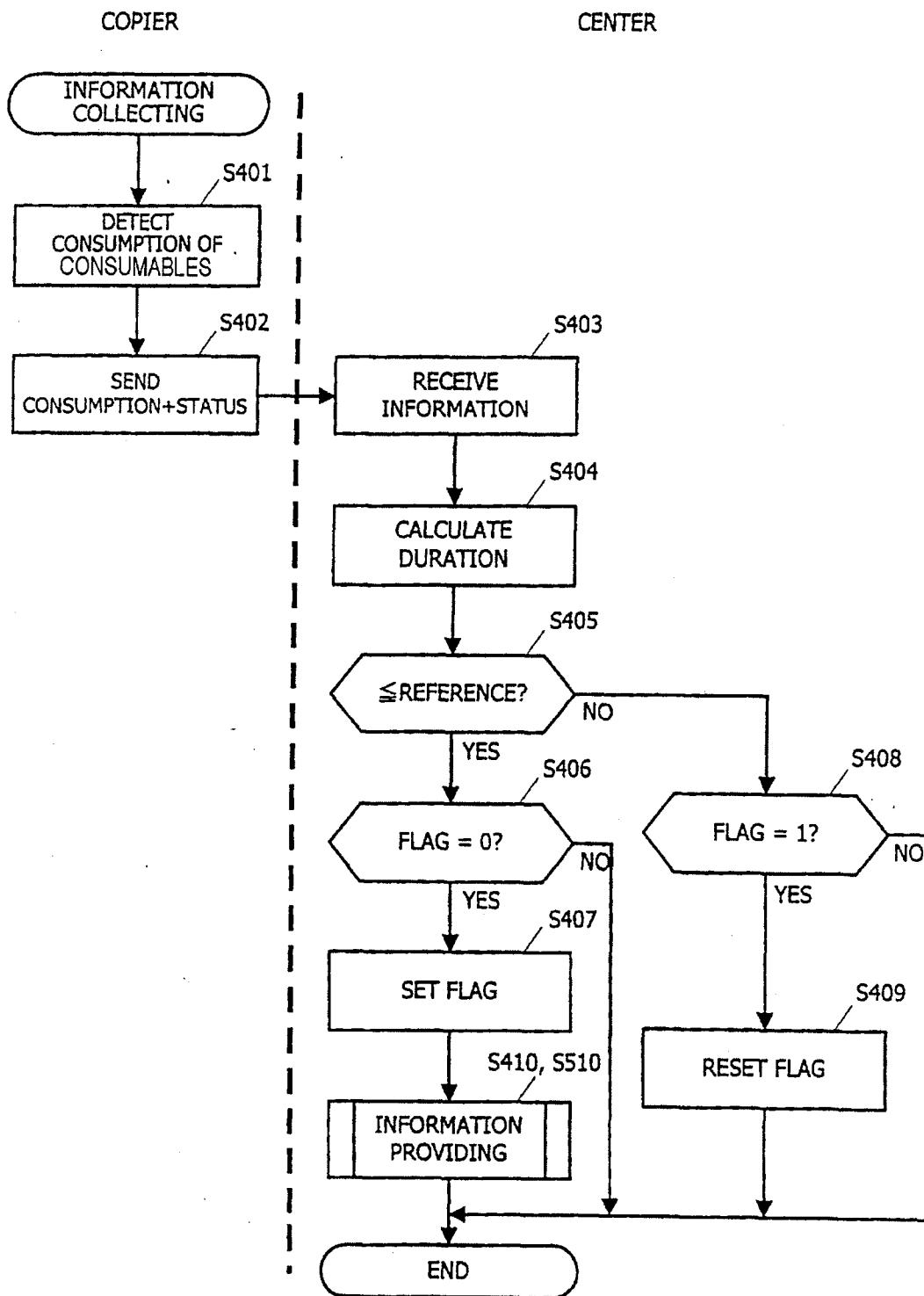


FIG. 18

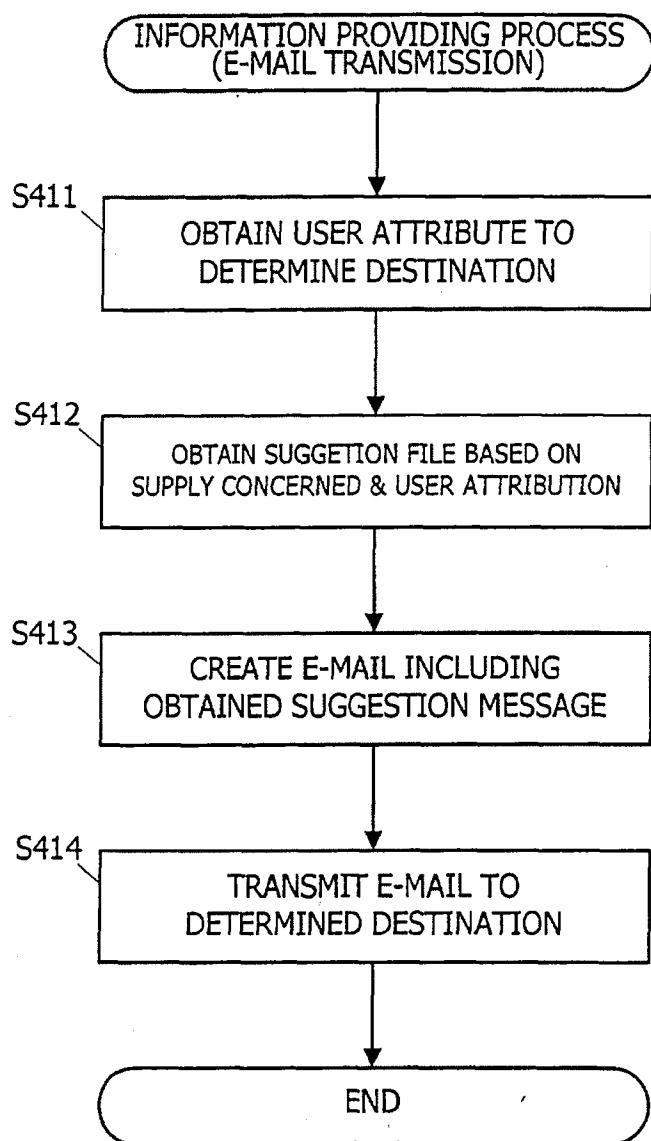


FIG. 19

Subject: Notice for Toner Replenishment
Date: Jan 1, 2001
To: a@aa.++.jp
From: supply@##.co.jp

Dear Mr. **:

Please be informed that the toner unit in your copier will be exhausted soon (within about 1 week). Prepare new one for replenishment before exhaustion.

FIG. 20

Subject: Notice for Toner Replenishment
Date: Jan 1, 2001
To: d@aa.++.jp
From: supply@##.co.jp

Dear Ms. **:

Please be informed that the toner unit in your copier will be exhausted soon (within about 1 week).
Check your inventory and prepare new one for replenishment if necessary.

FIG. 21

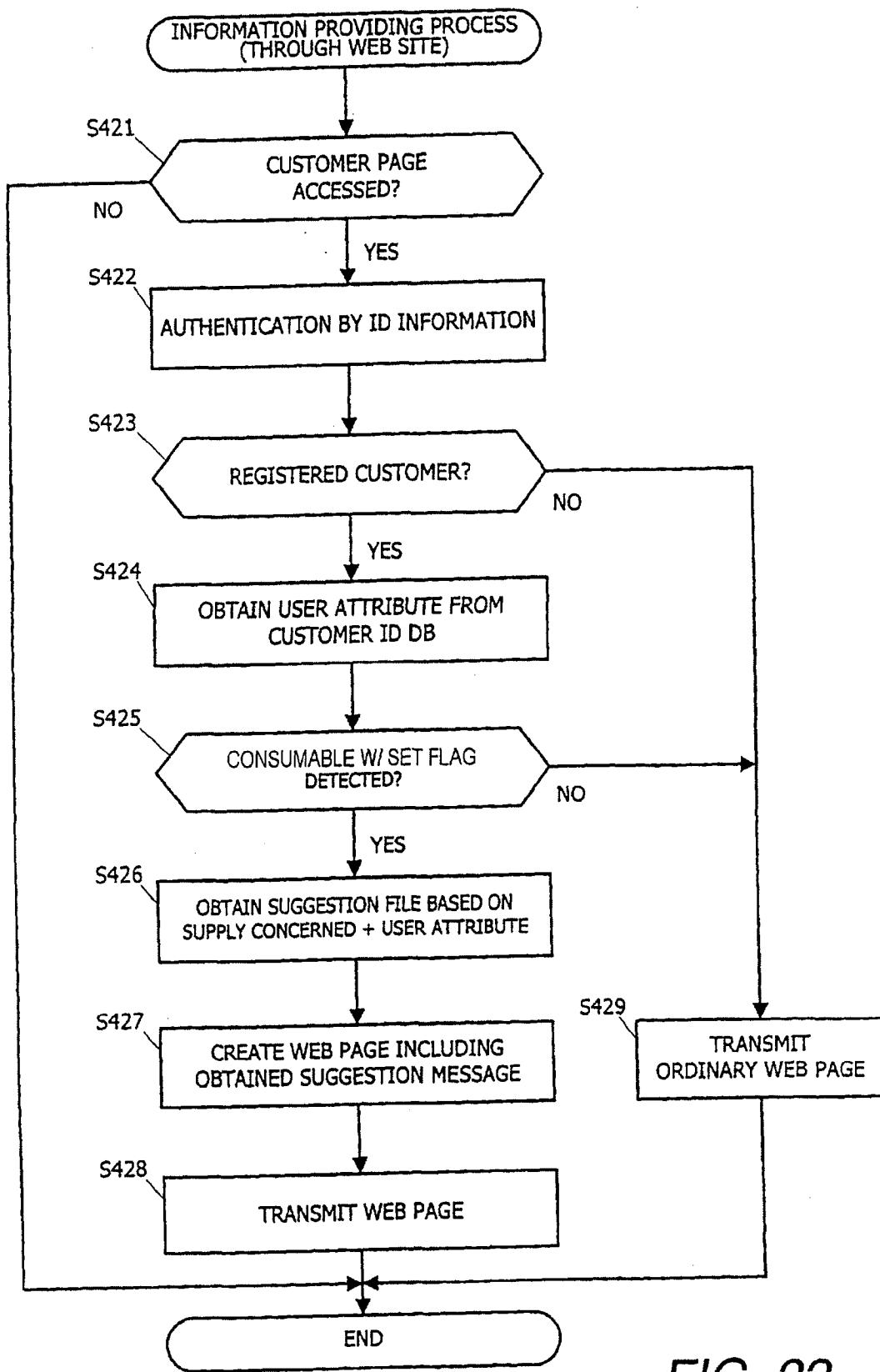


FIG. 22

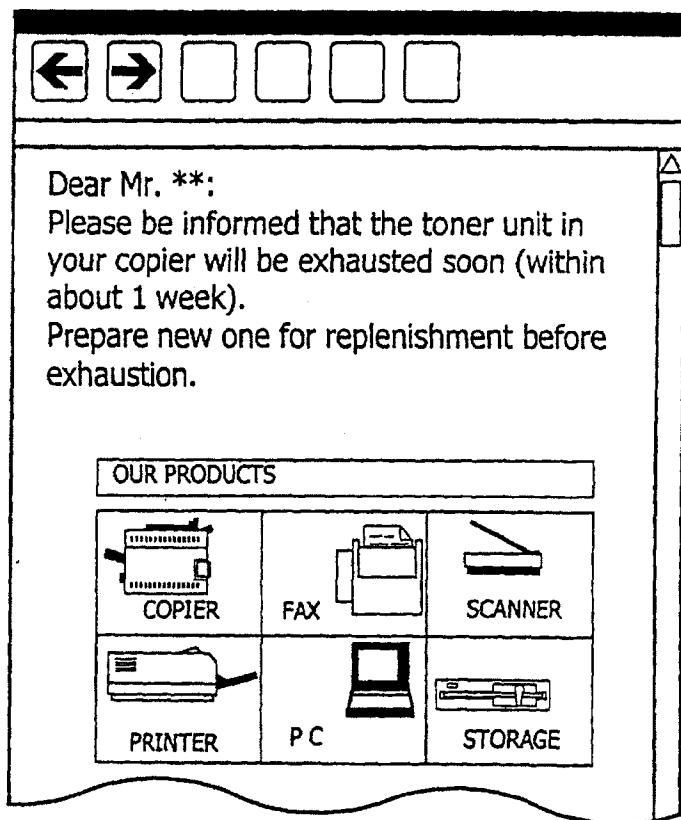


FIG. 23

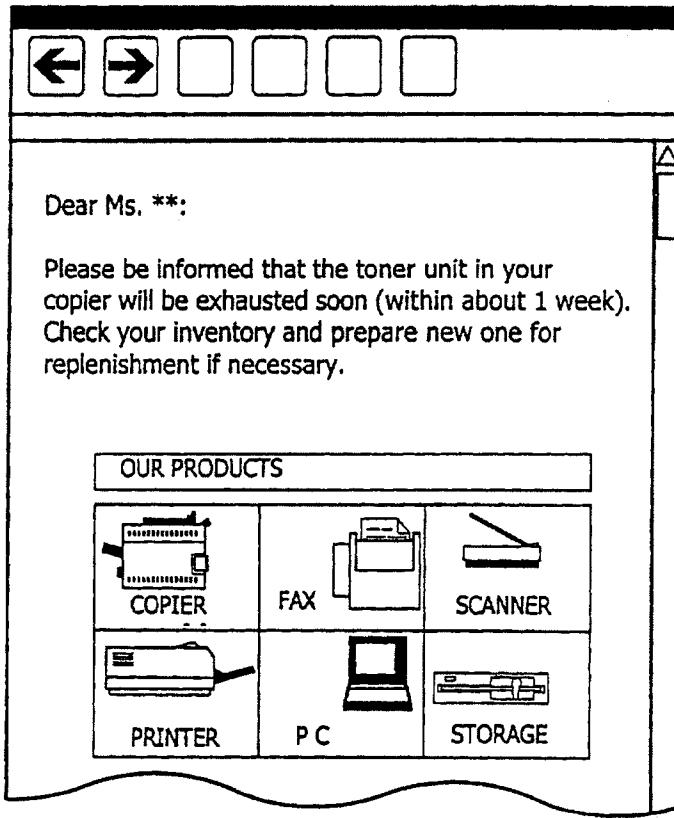


FIG. 24

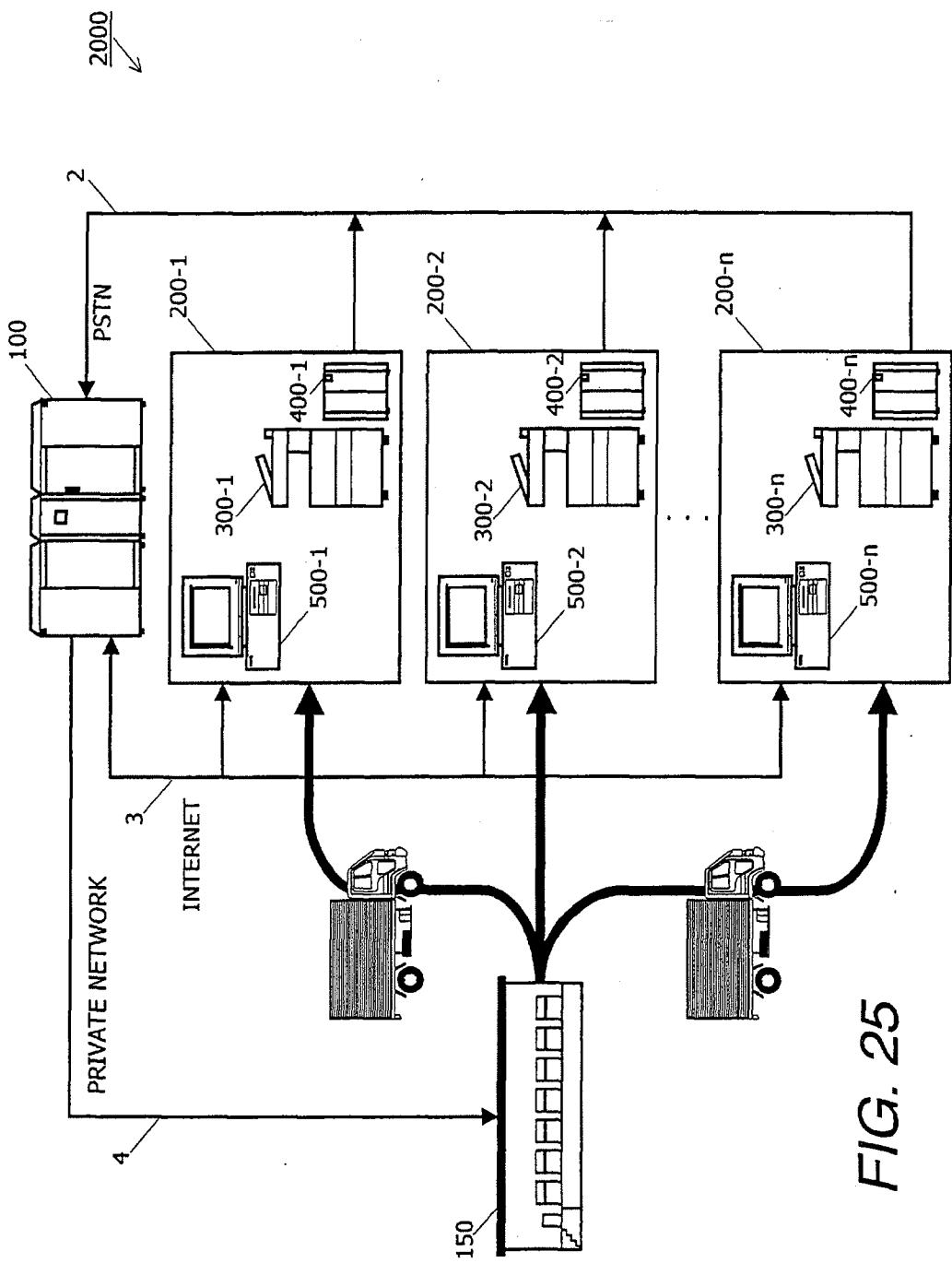
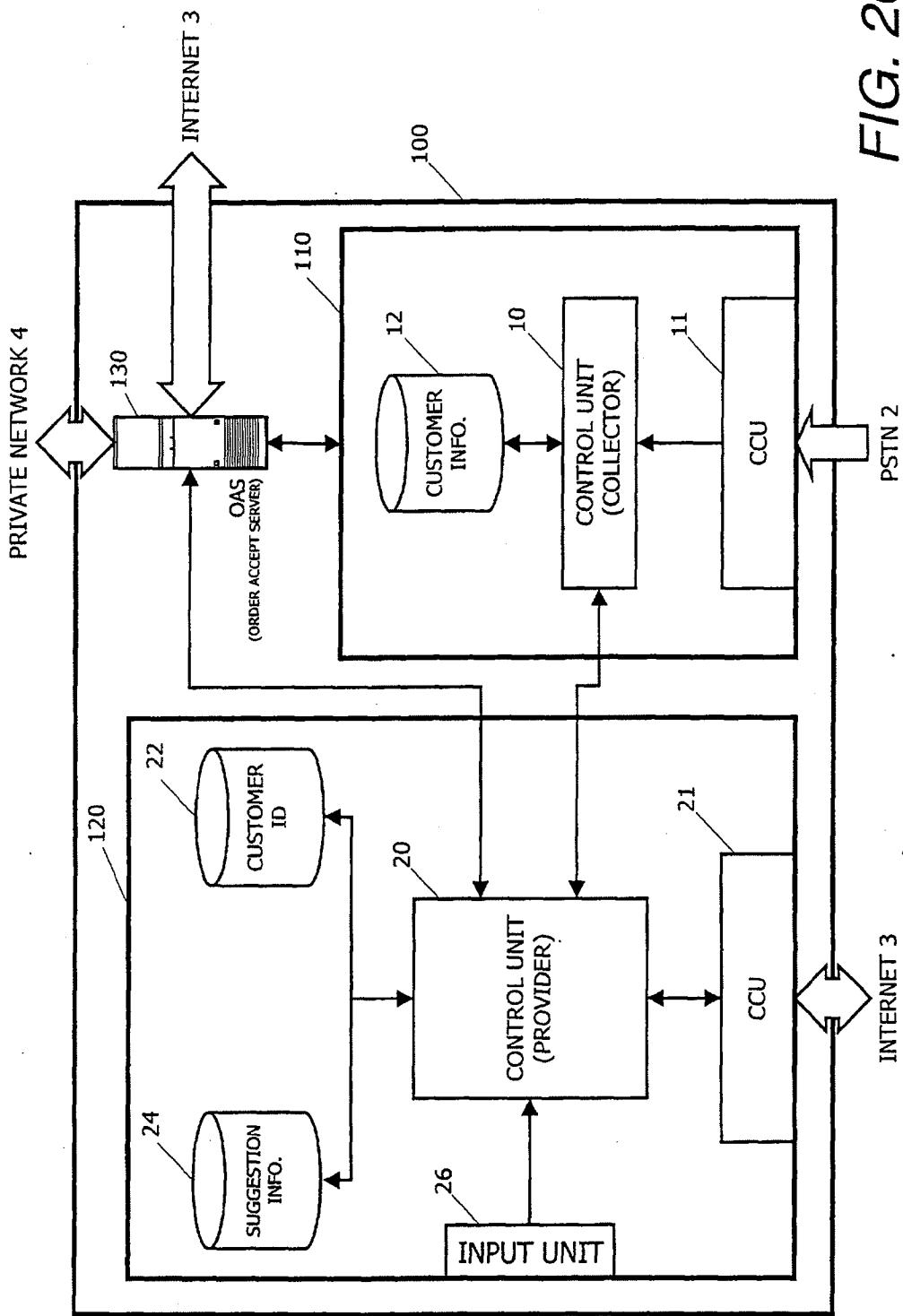


FIG. 25

FIG. 26



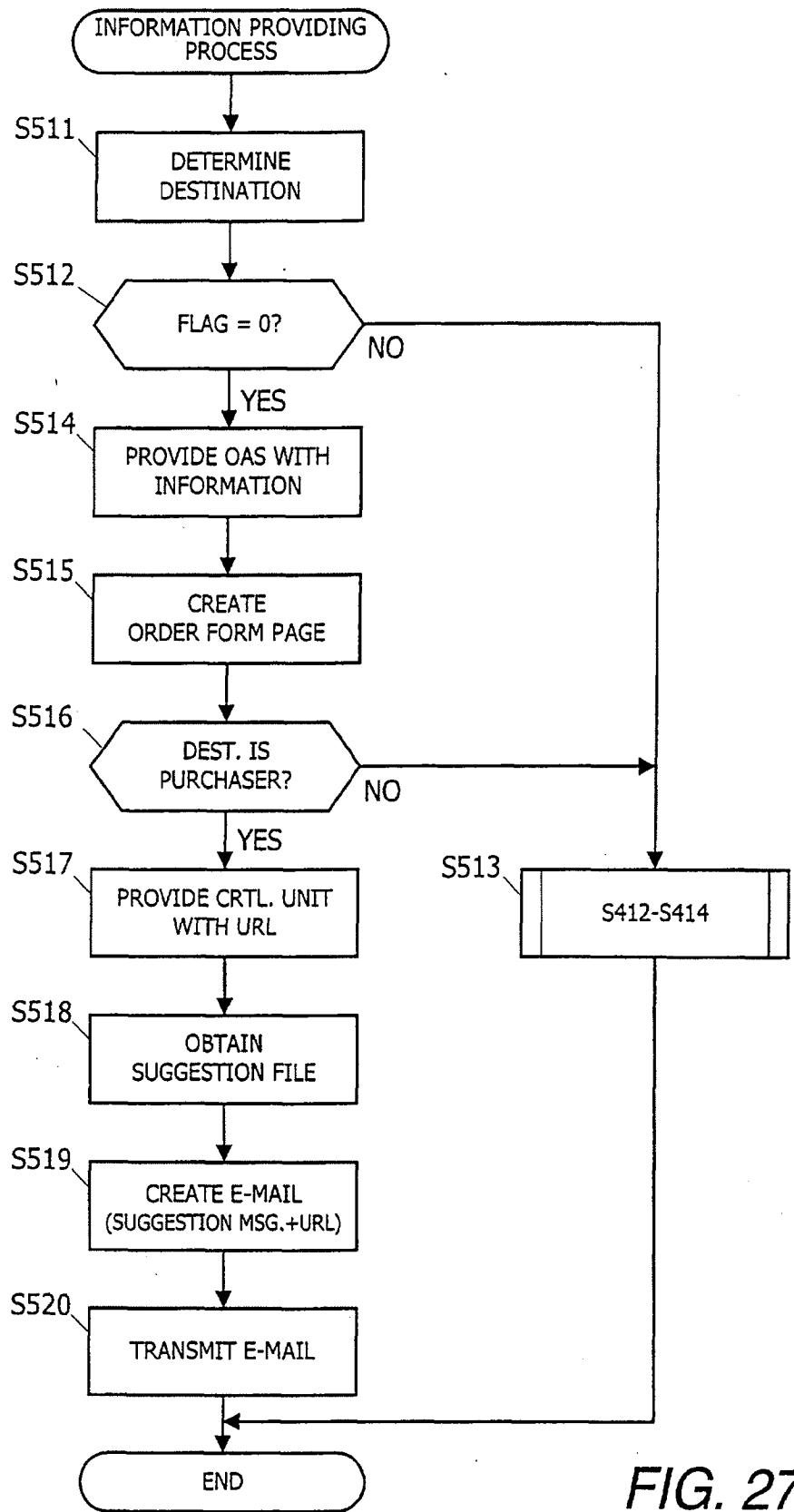


FIG. 27

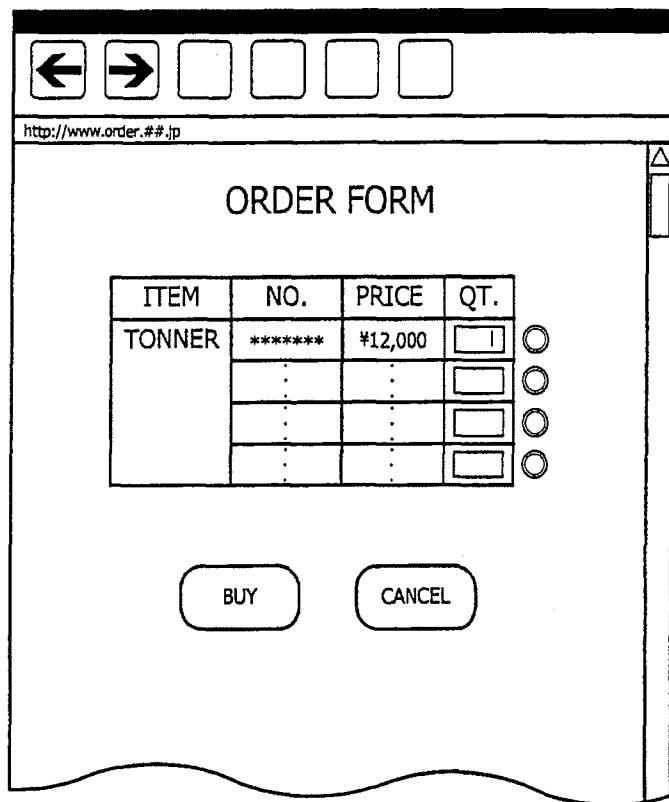


FIG. 28

Subject: Notice for Toner Replenishment
Date: Jan 1, 2001
To: d@aa.++.jp
From: supply@##.co.jp

Dear Ms. **:

Please be informed that the toner unit in your copier will be exhausted soon (within about 1 week).

Check your inventory and prepare new one for replenishment if necessary.

Replenishment supplies are available at:
<http://www.order.##.jp>

FIG. 29

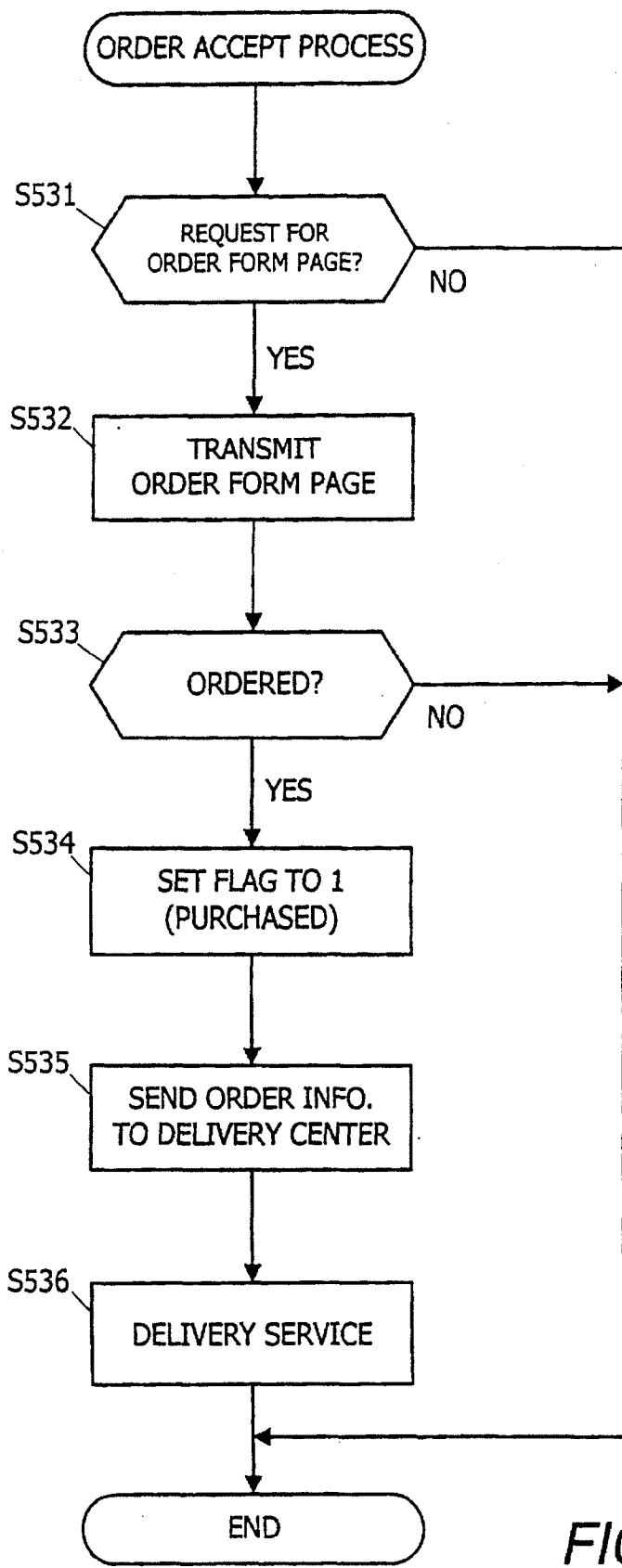


FIG. 30

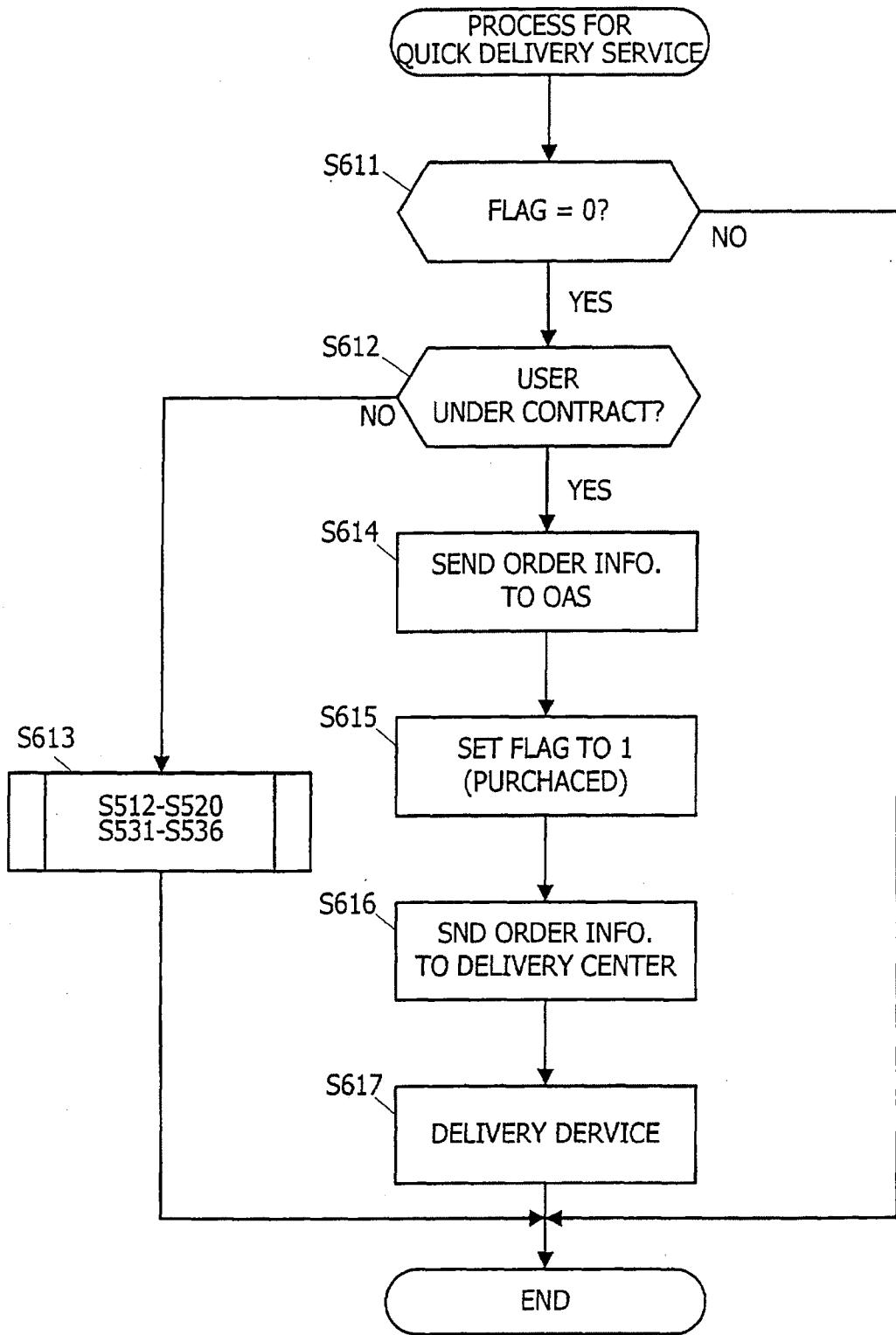


FIG. 31